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GENERAL

Looters Japan to 'threat act on to flood trade homes' barriers

Homes finoded by the thaw could become a target for Jooters, police said, as plumbers. local authorities and emergency services struggled to cope with floodwater.

The North West Water Authority said the situation would be even worse when industry started again today and more burst pipes were discovered.

In Wales, where some areas are still cut off by snaw, a row has crupted between the Welsh Office and the Government over special and for the emergency.

Councils claim they will have to spend three times as much as they were hargaining for be-fore getting aid and are seeking a meeting with Welsh Secretary Nicholas Edwards. Weather, Back Page

3m jobless likely

Employment Secretary Norman employment would top 3m this mouth and would go on rising through the first part of this year Back Page

TUC cautious

Confidential TUC paper discloses that Congress House is taking a cautious view of militast proposals put up hy hig urions on the Government's new labour relations legisla-tion. Back Page

Sinai talks

Jsraeli Defence Minister Ariel Sharon statted a visit to Egypt to discuss detailed plans for Israel's final withdrawal from Sinal Page 2

Sinn Fein arrest

Danny Morrison, Provisional Fein publicity director. who was sent to Canada to counter the Rev Ian Paisley's anti-IRA campaign, was arrested

U.S. missile test

Ohio, \$1.2bn (£642m) U.S. missile while critising subtest range.

Fatal cast

Paul Hurst, 14, of Gateshead. died on a fishing trip when he was struck on the head by a east by another angler.

Finland votes

Finns hegan voting in the first stage of finding a successor to Urho Kekkonen, the country's ninth President, who resigned last year because of ill health.

Divers killed

Five U.S. Navy divers died in an airlock accident aboard the submarine Grayback after a training exercise off the western Philippines.

Gone fishing Some 60 Hull and Grimsby trawlermen are going in New Zealand to crew two of Britain's biggest trawlers-sold hecause

of the decline in fishing opportunities. Page 4

Briefly ... Billingsgate fish market moves tomorrow to a new site in London's West India docks. Gang hoss Raffaele Ferrara was arrested by Naples police in their fight against the

Neopolitan Maña. England's cricketers were 307 for six a' the end of the fourth day of the Fifth Test against India in Andras.

against the

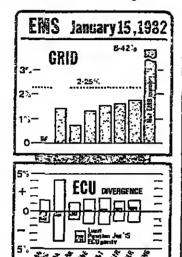
Management: Air Zim- Survey: babwe 10 Computer Industry Inset

U.S. felecommunications: Lombard: Samuel Brittan squaring up for a fight 12 on a new kind of competition 13 De Lorean: why it wants Justinian: expanding the more 13 prosecutor's role 9 specialised Editorial comment: com-

Por latest Share Index phone 01-246 8026

O JAPAN will take "drastic action soon to remove non-tariff barriers in trade, its Interna-tional Trade and Industry Minister said, Back Page

BUSINESS



The chart shows the two constraints on European Monetary System exchange rates. The upper grid based on this weakest currency in the system defines Taylor cent. The lower citari gives each currency's divergence from the control rate." against the European Currency Unit (ECU) asoli a basket of European currencies.

O BELGIAN FRANC devaluation rimmins were strongly depied by the Government in Brussels lost week. The member at the European Mone tary System, but was well within its alarm bell divergence limit. The D-mark and lira chauged places several times. with the lira finishing as the second weakest EMS currency, sughtly below the German unit.

An easier trend in Amsterdam interest rates followed the rise of the Dutch smilder to the top of the system, but French rates tended to rise on Friday as the franc weakened. On Thursday Paris call money was equal to the lowest level since the election of President

Trident submarine, fired its first o DE LOREAN, the UK Government-hacked sports car commerged off Cape Canaveral in pany, expects to hear today the U.S. Air Force's eastern whether the Export Credits Guarantee Department will grant it \$60-\$70m in finance guarantees. Back Page

O BUDGET will introduce tax relief for companies investing in Britain's depressed and defour-ounce lead sinker on a line clining inner cities. Back Page

> O LEAK of the atonopolies Commission decision on the Bank of Scotland is to be investigated by the Government. Editorial comment, Page 12

> O CAR TRANSPORTER companies are expected to face a Monnpolies and Mergers Commission inquiry suon. Page 3

O UK COMMERCIAL VEHICLE production should jump by nearly 30 per cent this year from 1981's denre-sed levels. according to the Economist Intelligence Unit. Page 3

O MINERS in South Wales vote Iomorrow on the Coal Board's 9.5 per cent offer. Bad weather delayed the hallot, expected to hald the key to the outcome nationwide. Page 5

O DUNLOP Group's 600 werhers at the Semica floor cuverings cland in South Wales which the company intends to close vated to continue their occupation in soite of an ultimatum to quit the site or lose severance payments. Page 5

@ ICL'S managing director calls for massive expansion in Government spending on the com-puterisation of public services in today's special FT supple-

CONTENTS

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Unit Trusts 19

Nationalisation Bill after legal setback THE FRENCH Government will five weeks." Two interministerial meetings crimination today take orgent steps to prepare new terms of compensation are scheduled today, and a for its controversial Nationalisation Bill, after the country's inentary party tonight, in a race

The geonell's ruling, on Sajurday night, was the most serious setback for the Government's

dent Mitterrand was elected in Although the council, the supreme arbiter on constitu-tional issues, approved the basic principle of the talleover programme, if turned down several clauses, particularly to do with

the way sharcholders are com-

economic strategy since Presi-

pensated. his decision has the effect of holding up the law under which the Government is to take over five top industrial groups, the larger private-sector banks and the country's two most powerful helding companies. It will also substantially increase the cost of the proposed nationalisation.

The rejection of the compenclauses - which the council said were not separable from the overall text — forces the Government to go back through Parliament.

M Jean Le Garrec, Secretary of State in charge of the nationalisation programme said

Constitutional Council rejected to get new compensation clauses parts of the Bill. Wednesday. Before then, they must be seen by the Council of

> The current special session of Parliament, due to close at the end of this month, is expected to be extended to make room for a debate o new compensation articles.

to promulgate the law in the next few days. Chairmen would have been named to the newly nationalised companies on Wed-The council, to which the law

had been referred by opposition of the National and the Senate, the Government's memhers Assembly accepted right to nationalise all the companies on the list, its method of payment with long-term state nonds, an dits exemption of foreign-controlled banks. This puts to an end the threat

or mationalisation over foreign hanks - including the French Barclays subsidiary - whose deposits were over the minimum threshold applied to French hauks.

Last autumn, the Government ignored a recommendation made by the Council of State, a conyesterday he hoped the delay by the Council of State, a con-could he trimmed to "four or sultative body, that these banks should be included to avoid dis-

The Constitutional Council. made up of mine appointees and exercising independent powers. rejected six articles and one paragraph of the Bill which the National Assembly finally voted a month ago.

The decision, published yesterday in the Official Gazette, is much tougher than the Government had been expecting, and cannot be appealed against.

The council said the final compensation formula - based The Government had hoped parily on historical share prices, partly on profits and assets — was unconstitutional because of the way share values were calculated and because shareholders were not being paid dividends for 1981.

lt also overruled a clause allowing chairmen nationalised companies to sell off overseas shareholdings at their discretion. This clause was seen as a precaution in the event of legal clashes over the nationalisation of interests outside France.

Last, it rejected the exemption of banks owned by couperatives from the hank nationalisation scheme. This decesion, it was made clear yesterday, does not affect the main co-operative banks such as Continued on Back Page

Delay will he keenly fell hy Millerrand, Page 2

Hopes of solution to rail dispute hinge on Acas

BY CHRISTIAN TYLER, LABOUR EDITOR

A LONG-SHOT solution to the rail confirmation was being canvaised last night whereby British Rall would pay its train drivers the disputed 3 per cent in return for rapid negotiation and binding internal arbitration on the productivity issue.

The plan seems to depend on a move, possibly loday, by Mr. Pat Lowry, chairman of the Advisory, Conciliation and Arbitration Service, BR officials Engineers and Firemen (Aslef). difficult to dishonour.

Even if the plan works, there seems little chance of presenting the drivers from striking again on Wednesday and Thursday, Aslef leaders, bulstered by the verdict of Mr Len Murray, TUC general secretary, just Friday that BR is in the wrong. are digging in for a fight to the

hnish. They will meet tomorrow to in various ways and possibly eaffing a total strike. Meanwhile the BR board also

meels tomorrow. At the least, it is likely to decide that if next Sunday's strike ones ahead to will not pay the rest of the railwaymen even if they turn up It can do this because Sunday work is paid at overtime second-stace

British Fail expects to be operating commuter trains in all areas by 6 am today. But the service will be patchywith only half the commuter trains expected to run on the London-Milland Region into Eusinn, St. Paneras and Marylebnu. Inter-City services will

rates and is not covered by the take soundings with the Assi-ciated Society of Locomotive back pay that it would be legally

-BR had hoped that Mr Murray and Mr Lowry between them could sell the peace plan to Aslei. Now the plan depends on whether Mr Lowry feels able to put Acas's neutrality at risk by taking the initiative when Aslef says the industry's own procedure has been ignored.

Yesterday Mr Clifford Rose. discuss stepping up the action ER member for industrial relations, said it would be "sento talk to Acas again. and BR would respond to any overtures.

The dispute is over pay and time to prevent a national BR says a 3 per cent pay

depends on prior commitments by the unions to accept flexible rostering-variable shifts of seven and to nine hours instead of the present normal eight. If BR agreed to put the issue

to the Railway Staffs National Tribunal, chaired by Lord McCarthy of Oxford University. would be taking a gamble, In the past the tribunal has defended the unions' eight-hour day. Aslef claims to have solid support from its 27,000 mem-

hers and sympathy from many

railwaymen helonging to the

National Union of Railwaymen despite the NUR's readiness to sign the flexible rostering agree-Last night, Mr Bill Ronksley,

a senior Aslef executive mem- Polish loyalty pledges may stop. ber, warned that the rail dispute could develop into a wider conbetween the confrontation unions and the Government. Calling Mr Murray's interven-

tion a "very important contribution that put the whole thing in perspective," he added: "1 that this is not just a question productivity "understandings" of productivity, but of Parker reached at Acos last August in and the Board going out to destroy Aslef. There is a feeling that Parker is acting on award Government orders.

De Beers blocks UK statistics on Soviet diamond shipments BY DAVID MARSH

DE BEERS the South African

mining company which dominates world diamond marketing, the diamond statistics to remain has blocked publication by the Brilish Government of sensitive on shipments of diamonds from the Soviet Union io London.

Under the move, which affected Bruain's trade statistics from the beginning of last year. the Government is no longer providing figures on clandestine shipments of Soviet dismonds to London, where they are sold through De Beers' worldwide marketing network.

The link in diamend marks. ing between two countries of apposite ends of the international political spectrum has been known for years. But it is not formally admirted by either side, and is a subject of consideralde conbarrassment purticularly for the Russians. The move effectively wraps another layer of secrecy around

the highly descreet international trade in gold and dismonds, when the Soviet Union is struggling hard to raise funds. n the West by boosting gold

South Africa and the Soviet have been hard hit during the nast year by weak prices. Last week De Beers announced a 45 patiable because at the beam-per cent drop in diamond sales cone of 1901 Britain's Departto try to steady the market.

Britain's Customs and Excise sent to London for transshippromits that De Beers asked for ment. impublished and that it agreed

In the 1970s the British Government took action to block statistics on gold imports. into the London market, partly a similar move on aircraft shipin response to Russian complaints made via the London reason. bullion dualers.

The guarantee of discretion in London, together with some lessening of anonymity in Zarich, the rival trading centre, contributed to a Soviet decision last year to switch some gold chromens to Britain instead of Switzerland,

Mos row's deliveries in London have mainly been rough tumpolished; stones which are passed on via a third party to De Beer; and then sold through its Central Selling Organisation. The CSO handles the marketing of about 80 per cent of the werld's diamond production.

Russian shipments to the UK rormally run into several bundred million pounds a year. Bedenting Sastet foreith ex-change shortages, the deliveries South Africa and the Soviet are mought to have continued Union, the main world are all high rate last year in spite ducers of both commodities, of the weakness of the dumond market. But no proper figures are

The Department defended the action-which affected all dlamond exports and imports for last year-on the grounds that it removed a distortion of the trade figures. It also made ments last year, for the same

Asked to provide the missing figures, the Customs and -which is responsible Excoisefor collecting the figuresdeclined to do so hecouse it would identify the trading position of De Beers. trader was consulted (about the possibility of publishing the figures) and turned it down, the Customs and Excise said

For several years up to 1980. Russian diamond shipments to London made up the lion's share of imports from Moscow under the Trade Department's opaque heading "non-metallic mineral manufactures, came to £202m in 1978 (out of total imports from the Soviet Union of £688m), £335m (total £828m; in 1979 and £367m 110tal £786m1 in 1980.

Last year, however - for which figures are available because of the civit servants' dispute the identified imports drupped dromatically to only about last year as it built up stocks must of Trade stopped pub- £100,000 a month because of the ushing ligures for Russian gems, changed statistical coverage.

Walesa 'will be set free soon'

By Our Foreign Staff

MR LECH WALESA, Snlidarity leader will be released from detention "in the very near future," Mr Stefan Staniszewski, the Pullsb ambassador to Britain, sald yesterday.

Mr Staniszewski, told reporters at Heathrow Airport:
"I cannot tell you the exact date, but it will be soon. The decisinn has been made." The amhassador was greet-

in from Warsaw. He said he bad "just been tuld from Warsaw" of the "good news about Lech Walesa." reports Other Warsaw, however, snggested that hard negntiations are continuing over Mr Walesa's

ing bis wife, who had flown

release, and that he is still Insisting he will not talk to the Government without the rest of his Solidarity presidium, all of whom are interned or in hiding. But there were Indications that the Church, in the per-son of Archbishop Jozef Glemp, the Polish Primate, may be putting pressure on

Mr Walesa to slart negotia-

tinus with the Government without all his demands being mct. In an interview with Reuter in Warsaw, Senator Larry Pressler, the unity senior U.S. politician to bave visited Poland since martial law was declared on December 13, sald be "got the impression sald be "got the Impression that the Primate was being critical of Mr Walesa's intransigence." Mr Pressler said Archbishnp Glemp bad twice referred to Mr Walesa as an "inexperienced politician," who "had not heen lnng in politics and did not know how enmplicated

things are."
Mr Pressler said: "The
Pulish Primate told me that Mr Walesa is expecting the Communist Party In go down on bended knees and applogise for what happened."
The Archbishop was

extremely anxious to get scrinus neguliations under way again and was worried that if this did not happen lhere could be civil war. The Archbishop told Mr Pressler, who is chairman of the U.S. Schate's "Food for

Peace " snb-committee. Ihat. there were radicals on buth While be criticised General Wojciech Jaruzelski. be also implied that there were tougher and more extreme men waiting in the wings.

Page 2

Ronson soldiers on in attempt to control ACC

BY JOHN MOORE

Corporation, the entertainments empire headed until last week by Lord Grade, from Mr Robert Holmes à Court, the Australian entrepreneur.

Mr. Ronson today meets bankers and lawyers to discuss his oext move after a threehour meeting on Saturday with Mr Holmes a Court at which Heron's indicated £42.5m offer

for ACC was discussed. Yesterday, Mr Ronson sald: "I am not walking away. I thrive on aggravation. There are a lot of options open to us. ACC has good businesses and we are prepared to pay a price." ACC and Mr Holmes à Court. whose master company, the Bell Group of Australia, has launched an agreed bid of £36m for ACC, has already snubbed last week's approach from

Heron Corporation. The stumbling-block over last week's approach by Heron was its insistence that before making its £4.2m offer it would need to mount an investigation into the company's affairs taking seven

But ACC and Mr Holmes à Court told Mr Ronson and his advisers last Wednesday that if Heron were to make an offer t would need to do so by midnight, without conditions attached. Heron was also expected to

guarantee net debt at ACC of £50m, but before doing so. wanted more information about the group's affairs, and in any event was not prepared to do so before it took the company It is understood that one or two lending banks have

expressed concern about the

position and the recent City rows and controversies surrounding the company, although it is not thought that any loans have been called in. Mr Norman Ferguson, investment manager of the Imperial Group pension fund, an institu-

ance yesterday about the offer which ACC has a 51 per cent for ACC by Mr Holmes a Court. holding. "If it is impossible to thwart do something with the company and make it worth more than the Ronson offer." Representatives of the pension funds who tee, plan to meet this week to discuss the developments.

Tomorrow, legal representatives of five ACC directors-

MR GERALD RONSON, chair- Lord Grade, Mr Louis Benjamin, man of Heron Corporation, is pushing ahead with his campaign to wrest control of Associated Communications Lord Grade, Mr Louis Resignation, Mr Norman Collins, Mr L. S. Michael, and Sir Lee Plintary —as well as Mr Halmes a Count Associated Communications injunction sought by Mr Jack Gill, the group's former men-

aging director.

His action against the ACC directors has been brought to ensure that he eventually receives his record payment of £560,000 in compensation.

The five directors signed in undertaking at a meeting of voting shareholders to pledee their voting shares, representing 45.3 per cent of the total to support payment of the core-

pensation. Because of other action by institutional shareholders, who are seeking to block Mr Gib's payment through an aniquence in the courts, the resolution for approval has never been put to shareholders at a meeting.

Mr Gill has now brought his action to prevent the shares of the directors named in the action from passing to Mr. à Court as part of the bid deal. and to stop Mr. Holmes a Court from registering the shares.

If the injunction is aranted it could prevent the bid by Mc Holmes à Court from going unconditional until the compensa-tion question to Mr Gill is resolved. That will not take place until the outcome of the legal action of the institutional shareholders is known. The institutions are going

back to the courts on January 26 to seek a continuance of their interior internetion antil the case comes before the courts in mid-

February.

It is understood that the scrvice agreement of Lord Grade
has been renegotiated by Mr
Holmes 5 Court. Should be retire or leave the group at any time, he will become entitled to a pension of around \$45,000 to \$46,000, and will be allowed to buy his home in Lendon at enst. His value is thought to have been reduced from the £303.630 shown in the last

accounts. Mr Holmes à Court is understood to be actively considering tional shareholder in ACC the future ownership of Central voting shares, expressed annoy- Independent Television, in the future ownership of Central

The Independent Broadcast-Mr Holmes a Court's control of ing Authority has frozen ACC's the company, our next move voting rights in the hoardmom will be in see whether he can of Central unfil the outcome of require ACC to reduce its holding wholly or in part once the deal goes through. Mr have formed a special commit- Holmes a Court, as a nonresident, is disqualified by law from controlling a television francise in the UK.

Blen and Matters. Page 12

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THENEW COMPUTER FOR BUSINESSES WHO CANTAFFORD TO PLAY GA

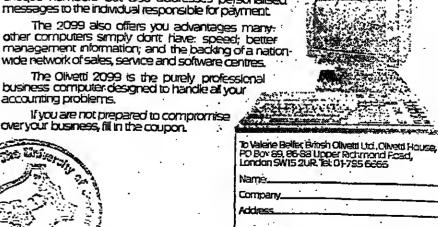
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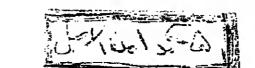
other computers simply don't have: speed; better management information; and the backing of a nationwide network of sales, service and software centres. The Olivetti 2099 is the purely professional business computer designed to handle all your

accounting problems. If you are not prepared to compromise overyour business, fill in the coupon.









BY ANTHONY McDERMOTT IN CAIRO

Defeoce Minister, arrived in a population centre. Cairo yesterday for negotiations which will concemtrate on the details of Israel's finat withdrawal from Sinal.

There are signs that lastminute hitches could develop over the removal of Israeli equipment and the status of two islands at the entrance to the Gulf of Aqaba.

Egypt is demanding that the withdrawal should be com-pleted on schedule as agreed in the Camp David accords and the peace treaty with Israel.

The daily newspaper Al-Gumhouriya has been recording the countdown to the with-drawal on its front page. Yes-terday, it said: "After 97 days, Israel withdraws from Sinai." Mr Kamat Hassan Ali, Egypt's Foreign Mioister, was quoted vesterday as saying that not one Israeli would be left in Sinai on April 26, the day after the withdrawat is to be compteted.
This presumably was a retort
to a statement by Mr Sharon on January 15 that he would ask Egypt to be flexible over

the deadline because some equipment needed dismantling. He was referring to equipleave behind anything which islands

MR ARIEL SHARON, Israel's might be used as the basis of

Another problem has arisen over the status of two islandsthe mouth of the Gulf of Aqaba at the head of which lies Eilat, Israel's sole southern port. The blocking of the Gulf helped to

precipitate the 1967 war.
The two Islands are under
Saudi sovereignty, as State
Department officials in Washington recently acknowledged, but were leased to Egypt in 1954. They have twire been captured by Israel in fighting with the Arabs in 1956 and 1967.

Israeli newspapers have reported that Saudi Arabia in-tends to reclaim these istands after their return to Egypt.
Egypt maintains that under
the terms of the 1979 peace

treaty they would be patrolled by Egyptian civiliao polite. Israel, which bas had border difficulties with Saudi Arabla and is also conferned about the build up of military asking for a commitment from Egypt that they would not be

returned to Saudi Arabia. Israel is also asking that the international peace-keeping peace-keeping ment near Israel's border, and force being set up to patrol said that Israel did not want to Sinai, should be placed on the

Arabs intensify war of words over U.S. policy

BY OUR FOREIGN STAFF

the Middle East during the Syrian Defence Minister, was weekend, accusing Washington of supporting Israeli plans to launch a fresh military offensive.

The attacks came after a visit to the region last week by Mr Alexander Haig, the U.S. Secretary of State, who discussed in Calro and Jerusalem ways of anger appears to be directed at reviving the stalled talks on the U.S. refusal to take any Palestinian autonomy.

Mr Chedli Klibs, secretary the Golan. general of the 22-member Arab The pre-League, said yesterday that rela-tions with the U.S. were "in danger." He accused Washington of backing Israeli military aggression and denounced "America's unqualified thwarting of effective sanctions against Israel for the annexation of Syria's Golan Heights."

Syria's determination to conbeen strengthened by the visit to the Soviet Union of Mr Abdul-Halim Khaddam the Foreign Minister, on Thursday and Friday. Apart from condemning U.S. policies they announced a further strengthening of relations

finitely. Syria and Israel came close to war last summer when the missiles were moved into

the Bekaa valley. But the main focus of Arab action over the annexation of

• The present soft market for crude oil is likely to continue into the second balf of this year. according to Sheikh Ahmed Zaki Yamani, Saudi Arabia's Oil Minister.

Sheikh Yamani said in an interview with the Middle East Economic Survey that be had changed his view that a balance between supply and demand would be reached by the middle of the year because the U.S. economy had not recovered

increase which would take into ing of relations, increase which would take into consideration part of the effect. to win Soviet approval for an of Inflation." He also said there extension of the treaty between might be room for further the two countries to cover the 30,000 Syrian troops based in medium and beavy crude oils.



President Zia: seeking further

Zia starts four-nation tour

PRESIDENT ZIA UL-HAQ of Pakistan yesterday arrived in Italy at the start of a visit to four European countries, Rupert Cornwell reports from Rome. The purpose of Gen Zia's tour is to bolster sup-port for his regime as a bulwark against Soviet expansion in sonthern Asia.

Gen Zia is accompanied by six members of his Government including Mr Aga Shahi the Foreign Minister. He is expected to press the Italian Government for economic and humanitarian aid to help cope with an estimated 1.5m Alghan refugees. Italy may also be requested to step np general financial and military assistance.

Gen Zia is later to visit Romania, Yngoslavia and

Emergency ends

A state of emergency, imposed in Srl Lanka five months ago by President Junius Jay-Reuter reports from Colombo. The emergency was declared to enable the Government to deal with violence between th majority Slnhala and minority Tamil communities.

India strike warning

India's Home Minister, Mr Zall Singh, said last night that a one-day general strike called for tomorrow was politically motivated and an attempt to weaken the Government, Renter reports from Delbi. The strike has been called by some opposition groups and trade nnions, partly in pro-test against new powers enabling the Government to ban strikes in essential

Tanker attacked

Phllippine officials are investigating an attack on a Japanese chemical tanker by two unidentified fighters, east of Mindanao island, AP reports from Manila. The incident is reported to have occurred on Friday when the Hegg, 5,307 tons, was en route to Pusan, South Korea, from Singapore.

FRENCH NATIONAL PLANS

Delay will be keenly felt by Mitterrand

BY DAVID WHITE IN PARIS

marked by a long, complex and bitter debate, the third sweeping nationalisation programme in French history was to have compensating shareholders by authorities' interpretation of Instead the forecast now bonds.

Instead the forecast now bonds. Instead, the forecast, now that the Constitutional Council has had its say, is for a fresh abortion is out of the question; the Council has not asked for

But large question marks now have to be put against two aspects of the Bill, which the National Assembly approved a alisation programme is not week before Christmas: its cost affected by the Couocil's deciwhich will certainly rise as a sioo: the acquisition of majority result of the Council's rejection of the compensation terms, and

It is doubtless the delay— which could be mooths rather than weeks—that the Covernment feels most keenly. The enlarged public sector is crucial to the Government's ambitions for growth and employment. liament and outside, have lost Putting a brave face on it, on several key points. The the Government can at least Couocil acceptad, besides the

political aspects of the Bill, as for banks on the list (deposits clause providing for the sale of

None of the names on the list, has been challenged. The Govperiod of uncertainty. An ernment can therefore go ahead abortion is out of the question; with nationalising the five the Council has not asked for one, and President Mitterrand's and the two giant holding com-Government has made it panies. Compagnie Financiere Government bas made it panies. Compagnie Financiere absolutely clear "there is no de Suez and Compagnie Financiere de Paris et des Pays-Bas. which have powerful stakes in both banking and industry.

The remainder of the nationstakes in the two arms groups, Matra and Dassault (already a fait accompli), and the renego tiation of arrangements for three groups in which foreign multi-nationals have the higgest shareholdings (which is still going oo).

Opponents of the Bill, In Par-

treatment

toriality. The Government is challenged

on three points, two of them relatively minor. It wanted to exclude co-operatives from the banking takeover. The Council says it must, to be fair, nationalise co-operative bodies that correspond to the other canks being nationalised.

This is expected to involve adding three banks to the list : Banque Fédérative du Crédit Mutuel (a subsidiary of the large Crédit Mutuel group), Banque Centrale des Co-opérative et Mutuelles and Banque Fran-caise du Crédit Co-opératif.

As a precaution in case oreign partners created foreign trouble, the Government had put in a clause giving chair-man of nationalised companies discretionary powers to self off holdings in foreign companies, This bas now been barred, in the

Council has let pass the main alise, the setting of a threshold was earlier forced to drop a well as the basic method of of FFr 1on and over) and the some interests back to the oriwate sector.

> The Council's decision probably means that the Government would have to go through Par-liament to sell any of these in-

> The hig problem is compensa-tion and is made worse by the lack of any alternative suggestion from the Constitutional Council.

The Government already

adjusted its formula in September, bowing to the opinion of another official non-Government body, the Council of State. which bas purely advisory powers. Improving its condi-tions for compensation—including in the basis for calculation not only past share prices, but past profits and nonconsolidated assets-It decided in exchange not to pay dividends for 1981.

Criticised for this, for not making provisions for inflation (tha base years for share prices and profits being 1978, 1979 and

AFTER six months of gestation, pride itself on the fact that the Government's right to nation same way that the Government 1980) and for not including Government now has to go

to the drawing board. The payment of 1981 dends alone is expected to between FFr 1.5bn FFr 2bn to the compens bill, estimated by the Gor-ment at FFr 28bn (£2.6;

including interest payer under the original formula. The Constitutional Co. by demanding a fur improvement, has exposed it to a row about its role are institution and about the ciof its members, appointed of dent and the Speakers of

two Houses of Parliament After the Government of After the Government of a new compensation for through Parkiament their nothing to stop the opposite of the compensation of th the law fits the 1958 con tion. The Government this time almost certainly for an urgent one-week dec If that decision want ag even greater actionary is

Polish loyalty pledges may stop

BY CHRISTOPHER BOBINSKI IN WARSAW

THE POLISH authorities may stop forcing people to sign loyalty pledges as a condition for keeping their jobs, according to officials of the Church.

Speaking in a Warsaw church over the weekend, Archbishop Jozef Glemp, the Polish Primate, again attacked the Government policy of extracting pledges. He also expressed concern that arrests were continuing. "We bear about further arrests when there are so many people interned awaiting release," he said.

He appealed for unity in the nation and a "ebange of heart" to make that possible. "The Church wants to bring our nation together." At today's meeting of the

Church-State mixed commission, the first due to be held since martial law was declared, the government's agreement to drop its policy on loyalty pledges would be construed as a concession to Church demands. But the military government is not expected to extend its concession to include the govern- Wojciech Jaruzelski's closest

The Pope has condemned the division of Europe at Yalta into two post-war spheres of influence whose shadow lies over the military clampdown in his native Poland, writes Rupert Cornwell in Rome. Although the Pope has emphasised the right of

administration, where trade union membership has been forbidden. A legal and binding professional code for the civil service may be drawn up, amounting to a loyalty

It remains to be seen, in any

nations-not only Poland-to

full sovereignty, this was the

case, whether the government's promise to drop the insistence on pledges will reduce victimisation of Solidarity supporters. The Church-State commission is beaded by Cardinal Franciszek Macharski, Archbishop of Krakow, and Mr Kazimierz Barcikowski, a member of the Politburo and one of General military regime in Warsaw. In his traditional andience fer foreign ambassadors to the Holy See, the Pontif said Poland was in "a state of

first time he had criticised

directly the existence of two

with harsh criticism of the

opposing blocs in Europe.

civilian advisers. The resumption of meetings at this level suggests that the Church-State dialogue, which has continued with difficulty since martial law was imposed, may be returning to traditional. more effective channels.

Another sign that relations between the two sides are returning to normal came yesterday when Polish state radio resumed regular broadcasts of Sunday mass. The broadcasts, which were one of the concessions granted to the church after

the priest quoted from the letter of Romuald Traugutt. executed as a leader of the 1863 uprising against Tsarist Russia Meanwhile, Poland's troubles have been compounded by the flooding of 24,000 hectares of

In addition, the party newspaper, Trybuna Ludu, said over the weekand that sales of grain by farmers to the state had not risen appreciably in the last month.

 A further indication, aibeit symbolic, that the government is striving for a return to surface normality, is the decision allow the army's guard of honour to parade yesterday in traditional four-cornered hats. The four-cornered hats were

part of Polish army uniform in the last century and survived until they fell victim of Warsaw Pact uniformity and made way for rounded hats. The return to the old style for the Sunday changing of the guard at the August 1980, bad stopped with monument to the unknown the introduction of martial law. soldier is a modest gesture to During the broadcast sermon, nationalist sentiment.

Early talks on one-part Zimbabwe

By Our Salisbury Corres

ZIMBABWE'S Prime Min Mr Robert Mugabe, reaffe his intention at the weeker pressing ahead with the e lishment of a one-party as He also repeated his Good commitment "Zimbabweanisation" of

Speaking near Salisbury S. Saturday, Mr Mugabe said Government planned to adj greater control of the mining industrial and farming sto thereby ensuring inches involvement by blacks! Mugabe was speaking in \$1. and his remarks were repoin yesterday's Sunday which quoted him as saying.

Before we have control our mines and farms and merce and industry we hav-Part of his programm

business from making buge fits at the expense of the The Government wanter

achieve a position in w. more businesses were run b workers but, Mr Magabe We will not take busines force. We will buy whateve

Where organisations where organisations taken over, they would handed over to the worker.
At another rally yesterda that Muzabe announced that Mugabe appounced that

Economic committee reviews price rises

BY OUR FOREIGN STAFF

as 400 per cent and may also Government is mindful of the change its proposed system of violeot unrest caused in 1970 compensatory pay rises. "The and 1976 and threatened in public as soon as possible," the official PAP newsagency foods. reported.

reviewing Its decision to acknowledging public opposition charges are too high." increase the prices of essential to the planned rises. Despite The Communication goods and services by as much the existence of martial law, the changes will be presented to the 1980, as a result of major price increases, especially in essential

The economic committee de-

THE POLISH Government is Janusz Obodowski, is Implicitly proposed heating and energy The Government originally

stated on December 31 that the prices of food, consumer goods and services would increase twofold to fourfold. Sugar, for example, was to rise by over 400

According to PAP, the pro-The government's economic clared after its meeting: "It is posed system to compensate for committee, presided over by Mr generally considered that the the increases bad caused contro-

price commission said that, by way of compensation, workers would get pay rises averaging 1,200 zloty (£8) a month on salaries averaging 7,700 zloty (£55) a month.

A Government economist, Professor Zdzislaw Sadowski, saying that no final decision had yet been taken on the pay rises. urged the Government not to be niggardly,

political power was meaning without economic control. real power," he said. "national iransformat would be to discourage

Mugabe amounted level talks would take remained soon between the two particles relation to be ruling coalition to be ruling coalition. abont a one-party state.

WORLD TRADE NEWS

KWU looks set for £190m generator deal with S. Africa

BY BERNARD SIMON IN JOHANNESBURG

of Siemens AG, has signed a letter of intent with South Africa's Electricity Supply Comcost of R350m (£190m).

The generators are for the new Kutala power station to he

built at Kendal, 80 miles east

KRAFTWERKUNION (KWU) The Kutala turbine contract tion of local content. of West Germany, a subsidiary is the last of a series of boiler German banks are almost R4bn placed by Escom-over the past two years for four large coal-fired power stations. mission (Escom) for six 600 Boilers for the Kutala station MW turbine generators at the will be supplied by Combustion

A KWU official said financing details for the turbines had not been completed. Decisions still have to be taken on the propor- contracts.

German banks are likely to play a key role in the financing The Bonn Government has lifted restrictions on export credit guarantees for South Africa to enable German com-panies to tender. German suppliers, including L and C Steinmulter and MAN will participate in no fewer than six of the eight recent hoiler and turbine

SHIPPING REPORT

of Johannesburg.

Hint of optimism for dry cargoes

WHILE TANKER business remained sunk in gloom, there were faint signs of improvement on the dry cargo side of the shipping market last week. According to Denholm Coates, there was reason for modest optimism for the first time in

many weeks for the owners of handier size (25,000-40,000 deadweight tons) bulk carriers in the Pacific. Increased business enquiry on the U.S. West Coast and in

Australia has resulted in a few higher-priced chartering fixtures and a distinct lift in morale. For larger tonoage, the East remains weak. But across the Atlantic, rates for grain car-goes from the U.S. Gulf to con-

tinental Europe have risen to \$10.25 a too. For handy size vessels, there was only a modest recovery on the U.S. Gulf-Japan run with

rates up to \$19.25 a ton against lows of around \$15.35. The tanker market, said Galbraith Wrightson, has been just "limping along." 'No large vessels were fixed from the Arabian Gulf, while only three

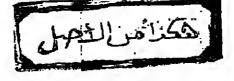
There were more Caribbean fixtures, but rates remained sluzgish. More fixing for discharge in Europe was seen, no fixtures were noted from West African terminals. doubt due to the cold weather in Europe. .

World Economic Indicators

INDUSTRIAL PRODUCTION

% change OVEL

| 146.5 | | | Nov. 30 | | year |
|---------|---|--|---|---|--|
| 170 | 149,6 | 157.7 | 149.2 | -1.8 | 1967=100 |
| Oct '81 | Sept '81 | Aug. '81 | Oct. '80 | | |
| 105.4 | 103.4 | 103.5 | 103.3 | +20 | 1975=100 |
| 176.6 | 115.9 | 116.6 | 115.4 | +1.0 ° | 1975=100 |
| 112.6 | 112.1 | 111.1 | 114.9 | -2.0 | 1975=100 |
| 120.9 | 125.8 | 116.0 | 125.4 | 3.6 | 1975=100 |
| 151.7 | 147.2 | 143.7 | 143.1 | +6.0 | 1975=100 |
| Sept 81 | Aug. '81 | Juth Al | Sept. 80 | | |
| 107.4 | 109.0 | 1129 | 106.7 | ÷0.7 | 1975=1 00 |
| 112.9 | 110.7 | 108.4 | 111.0 | +1.7 | 1975= 100 |
| | Se | urce (exc | ept U.S. en | Japan i: | Eurostat |
| | 105.4 116.6 112.6 120.9 151.7 5ept. '81 107.4 | 105.4 103.4 116.6 115.9 112.6 112.1 120.9 125.8 151.7 147.2 5ept. 81 Aug. 81 107.4 109.0 112.9 110.7 | 105.4 103.4 103.5 116.6 115.9 116.6 112.6 112.1 111.1 120.9 125.8 116.0 151.7 147.2 143.7 5ept. 81 Aug. 81 July 81 107.4 109.0 112.9 112.9 110.7 108.4 Source (executive) | 105.4 103.4 103.5 103.3 116.6 115.9 116.6 115.4 112.6 112.1 111.1 114.9 120.9 125.8 116.0 125.4 151.7 147.2 143.7 143.1 5ept. %1 Aug. %1 Juty %1 Sept. %0 107.4 109.0 112.9 106.7 112.9 110.7 108.4 111.0 Source (except U.S. enc | 105.4 103.4 103.5 103.3 +2.0 116.6 115.9 116.6 115.4 +1.0 112.6 112.1 111.1 114.9 -2.0 120.9 125.8 116.0 125.4 -3.6 151.7 147.2 143.7 143.1 +6.0 5ept 81 Aug. 81 Juty 81 Sept. 80 107.4 109.0 112.9 106.7 +0.7 |



European mission boosts India ties

By K. K. Sharma In New Delhi

HIGH-LEVEL talks between India and the EEC will begin today when a delegation led by Herr Wilhelm Hafer-kampf, vire-president of the European Commission, arrives

for a 10-day visit. The talks will be held in terms of the recently-stgned, five-year commercial and economic co-operation agreement between India and the EEC.

The new Indo-EEC joint New Delhi on January 22-23. Later, the EEC delegation will hold talks with major industry in New Delhi. Bombay and Calcutta.

Herr Haferkampf and his delegation will discuss with India's Commerce Minister. Mr Pranab Mnkherjee, ways to promote economic cooperation, trade. EEC investment in India and project aid. One of the proposals to be discussed is establishment of an EEC-India business coun-

A fillip to Indo-EEC relations, which bave been increasing at a slower pace than those with other conntries and regions is expected to emerge when a permanent EEC mission is set up in

The agreement replaces the five-year commercial cooperation agreement signed in December, 1973. This was confined to trade whereas the new pact covers a much wider area of economic, financial and investment activities.

Mexico signs nuclear safeguards agreemet a safeguards agreement a safeguard a safegu BY WILLIAM CHISLETT IN MEXICO CITY

MEXICO AND Canada have signed a nuclear safeguards agreement under which Mexico bas agreed to abide by the rules of the Vlenna-based International Atomic Energy agreement under

at the end of the three-day official visit to Mexico by Mr Pierre Trudeau, the Canadian Prime Minister.

country's state run nuclear

THE STRONGEST argument in

investing more than \$30bn at

The signing of the agreement came two weeks hefore Atomic Energy of Canada, the

The agreement was signed

company and six others from the U.S., France, Sweden and West Germany are due to submit tenders for a nuclear power plant in Mexico. King Carl Gustaf of Sweden arrives in Mexico City today

with a team of businessmen

also in pursuit of the nuclear contract. The contract, worth more than \$2bn (£1.06bn), is the first stage in Mexico's massive nuclear power programme to install 20,000 Mw by the end

of the century.

toughest country in safeguard matters and the fact that it has foregone a more formal agreement emphasises the intense competition building up for the contract. Canada is offering its Canada system based on

Canada is probably the

natural and not enriched uranium which is viewed favourably by the Mexican Government because Mexico has its own sources of the metal. The country would therefore not have to depend

enrichment. Canadian officials was Candn system would picked. Mexico will not million

August. -Mitel communications Ottawa and Telefonos Telegram
Mexico, the state run telegram phone company have agriculture to establish an \$18m 16-14 2000 venture to manufacture telephone switching systems

Canada awaits contract decision

Mr Pierre Trudeau's visit visit last week indicates the there last week was probably importance Canada attaches to the performance of this nuclear winning this contract, reactor in Canada itself. The The Candu (Canadian weakest may be Canadian Deuterium Uranium) reactor is industry's ability to belp a Canadian development born of Mexico enter the nuclear age. an Anglo-Canadian-French col-Mexico has declared the most laboration which began towards ambitious nuclear development the end of the Second World programme of any developing War. France supplied the basic country. It has no nuclear idea for a heavy water reactor reactors operating today, but which would use natural has two totalling 1,300 Mw (unenriched) uranium, avolding under construction. It talks of a big technical hurdle.

But the need to enrich water current prices in some 20,000 Instead of uranium—to make Mw hy the end of the century, heavy water - introduced Bids for the next tranche of another technical problem. Both about 2.300 Mw have been France and (much later) requested by February 1. The Britain abandoned the system, Canadian bid has been drafted leaving Canada as the only by Atomic Energy of Canada nation in the world to focus Limited (AECL), a crown cor- exclusively on a heavy water poration with a payroll exceed- reactor,

ing 7,500 which does research. Today, Canada has 5,500 Mw design and engineering for the Candu system. It also makes tion, and a further 14 units heavy water and design plants totalling 9,500 Mw under construction in the provinces of

Candu, however, has aix Ontario, Quebec and New Bruns- 77 per cent - "the higher the portfolio on Candu presented by the Canadian Governted by the Cana

Candu differs from other commercial reactors in that it uses 95 per cent: Even allog numerous small pressure tubes for the notorious difficulty. instead of a single large pres-sure vessel, to contain the conditions required to raise highpressure steam for a large turbogenerator. Its fuel is uranium dioxide, scaled into short fuel assemblies packed into these

The pressure tubes them selves pass horizontally through a large tank of heavy water, which serves as moderator for the nuclear reaction. Fuel can be loaded and unloaded by robot machinery while the reactor remains on load.

Candu continues to perform better than most other types of reactor. In its annual presentation to the International Atomic Energy Agency in Vlenna last autumn, the Canadian Government claimed that, by the end of 1980, the system had demonstrated a lifetime average capacity factor of

any reactor type in the wo Top of this league in was the Bruce 2 unit (860) comparing international formance figures, Can exceptional record cal seriously be challenged," Ott:

Mr James Donnelly, presid and chief executive officer AECL, in his annual report, year, claimed there was grow evidence of the suitability Candu for many countries.

Candu for many countries.

continued evidence of system's superiority and growing overseas experience. the construction of Carstations have stimulated w interest." Especially encou-ing was the fact that custon such as Romania and Sol Korea were expressing inter-

FINANCIAL TIMES, published steeps Sundays and belidays subscription rates \$365.00 per e

in buying more.

for this purpose.

announcement w

and Mergers Commission soon.

geoeral of Fair Trading, has

well as the five main car trans-

porter companies, telling them

Mr Gordon Borrie, director-

rand Rates row looms as MPs return

BY ROBIN PAULEY

MPs return to Westminster Secretary of State to alter the play by the same rules as allocate an auditor to local reading of the Bill to ban supplementary rates, which has during the recess.

Finance (Nn. 2) Bill will allow start of the financial year. It councils to fix a rate as high as they like in March but will prevent any second rate heing the loss by returning to the levied during the financial year. ratepayer or by making cuts. It replaces the first Bill, which would have dimited the main rate call and forced councils to hold a referendum before they

could levy a rate beyond a centraily determined limit.
This proposal had to be withdrawn when backbench Tory MPs indicated they would block its passage through Parliament because of the constitutional implications of referendums.

Bill have caused growing concern among MPs, local authoriis clause 4, which allows the to use such a power and would lish an Audit Commission to rate.

Local Government grant as a penalty after the concern. in choose whether to make up

> Unless it had substantial balances on which to draw, it would be forced to make cuts. This would mean the Government was controlling rather than influencing council spend-

> be the turning of local govern-

Some Whiteball sources say

before the committee stage audit. This provides for evidence to Abo

their progress up unduly. Mr Heseltine could then be accounts to Parliament. A number of MPs on both Mr Heseltine could then be accounts to Parliament. sides of the House feel the called to give evidence on Tory-controlled Solihull Counconstitutional implication would clause 4. One problem is that cil will today challenge in the ment into controlled local House, does not like the idea policy of the Labour-controlled But two aspects of the new administration if this power and has already said there are West Midlands County Council. iill have caused growing conwas used in only one case.

no "suitable Bills" for its use West Midlands is financing its

today and immediately plunge amount of central government councils had to obey—making councils from either the public into controversy with the second grant payable if he wants to at all decisions by March 31. But or private sector. The Bill grant payable if he wants to at all decisions by March 31. But or private sector. any time in the financial year, the refusal of Mr Michael leaves the Secretary of State This means that a council Heseltine. Environment Secre- with reserve powers to order attracted growing criticism which the Government feels is tary, to clarify his intentions an extraordinary audit of any overspending could lose some over clause 4 is causing growing council even if the Commission has decided not to call one.

Unless he can satisfy MPs Public and private sector would no longer have the right during today's second reading accountants are working on 2 debate a move may be made common approach to oppose this week to have the Bill taken this clause, which they feel to a special scrutiny committee threatens the independence of

> About 300 MPs have sigoed be taken in a maximum of three an early day motion urging an 90-minute sessions, enabling alternative, originally proposed access to Bills before they hy the Public Accounts Com-become law but not holding mittee giving ultimate control of public sector audits and

Mr Francis Pym, Leader of the High Court the cheap fares The second difficulty with the public transport charges with a ties and accountants. The first the Government does not intend Bill concerns the plan to estab- 14p in the pound supplementary

Strains on Labour peace pact likely

By Our Political Correspondent

STRAINS in the Lahnur Party's new truce seem likely to emerge when MPs return in Westminster today and start trying to pin down written to major car manufac-turers such as BL and Ford as precisely wbat was agreed between Lahour and nnlon leaders at Bishops Stortford

twn weeks ago.
Thoogh the desire for peace in the Labour Party now wider than at almost any print in the past twn years, some right wingers may refuse to accept the terms which the far Left is trying to put on the peace.

Members of Solidarity, the nrganisation set up last year to counter the activities of leftwing militants in the party, are in meet this week to consider their strategy in the light of the Bishop's

Stortford meeting.

Io particular, they will have to decide whether to press ahead with plans to imitate the Left's own tactics

Thrugh no formal agree-ment was reached at Bishops Stortford, the meeting was generally iterpreted as meaning that Mr Tony Benn would not stand for the deputy leadership again, if the Right dld not try to reverse any of the gains made hy the the Left since the election.

An indication of the desire for peace came yesterday when leftwingers moved to defuse a potential row over an article hy Mr Michael Foot, the party leader, which was highly critical of Mr Benn. At least one close enlleague of Mr Benn. Mr Michael Meacher, said he saw nothing provneative in the

BY DAVID CHURCHILL, CONSUMER AFFAIRS CORRESPONDENT CAR TRANSPORTER com- arises from concero about the yesterday confirmed that it had panies, which deliver cars from price levels of cars transported manufacturers to the show- from UK car plants compared rooms, are expected to be investigated by the Monopolies imported cars from the docks.

monopoly investigation soon

Car transporter companies face

asked to look at the degree of competition between companies take up to 18 months. in the industry and whether discouots are offered according to the distance a car is transpor-

that he plans to refer the car The five car transporter transport system to the comiscompanies contacted include: OFT.
Silenck and Colling: Distributor The investigation will he a Deliveries: the Tolemans Group: monopoly inquiry under the terms of the 1973 Fair Trading port, a subsidiary of the National Freight Company. Act. Mr Borrie's letter to the companies nutlines the draft The Office of Fair Trading has

terms of reference for the writtee to BL, Ford, Talbot. investigation and asks for comand Vauxhall and to organisaments. Once these have been tions such as the Motor Agents Association and the Rnad Haulage Association advising them of the impending inquiry. received the investigation will be formally referred to the

The proposed investigation The Office of Fair Tradiog in May.

been examining the car transporter sector but was unable with the cost of traosporting to comment on a possible monopoly loquiry. But the The commussion will also be commission's investigation when announced - is likely to

Mr Graham Roberts, managing director of Cartransport. said yesterday he was surprised at receiving the pronosed monopoly reference from the

"During the past five years over a third of all the vehicle delivery contracts have changed hands and several newcomers in the industry have been able to secure significant husiness, he said.

The commission is concluding its investigation into the supply of car spares in the UK. This investigation is likely to end

Optimism on commercial vehicle output

BY KENNETH GOODING, MOTOR INDUSTRY CORRESPONDENT

year, according to the Economist Intelligence Unit.

still he in a weak position be-cause the forecast output for 1982 would be more than 25 per

Motor Business forecasts that forecast to rise by 11 per cent commercial vehicle output this this year to 130,060 units. Howyear will be 285,000 units com- ever, the forecast recovery will pared with 231,100 provisionally not result in exports returning

cant improvement in production. 5.400. New models and the lower

value of sterling in international markets should lead to an increase io exports. Production The latest edition of the units of commercials for export is to the 1980 level of more than

Production should rise from 550

The unit says output of articulated units of 28 tons and rather than supplying from articulated units of 28 tons and stock will result in the significance, could go up from 3,200 to

is expected to increase from

At the other end of the mar--depressed for some time by the onslaught of the Japanese importers - should recover

The market for articulated Economist Intellingence Unit, 27 expected to show only a slight recovery this year — the unit units of up to 28 tons is prepriete a rise of about 3 per dicted to show the biggest INT. 24.

THE ROYAL Institute of per cent since the Government stock. British Architects today submits took office and architect's comproposals to the Government for missions 26 per cent lower, it is VAT registration to £25,600

Architects propose £1bn spending boost

revitalising the UK construction time for drastic action. RIBA's primary proposal to ing the initial allowances for £20,000 to £35,000. the Chancellor, for inclusion in industrial buildings and a 12. • Wider use of government the forthcoming Budget, calls month tax break on develop- guarantees to financial institufor a capital spending increase ment land in the inner cities, tions, which would encourage of £1bn on inner city develop- which would speed the release private investment in high-risk which would speed the release private investment in high-risk

ment, housing improvement and of new land for huilding. include:

Grants to assist first-time A reduction in interest rates, tion would enable the industry buvers in raising house deposits . Zero-rated VAT on repairs to achieve a modest growth rate could be met from such a sum. and maintenaoce. This would of up to 2 per cent in 1982/83. The institute claims that with greatly assist listed huildings compared with a forecast 3 per unemployment in the industry and generally improve, the cent contraction in output in at 400,000, output down by 17 quality of the nation's housing 1982. RIBA argues.

· Raise the threshold at which The proposals include doubl- stamp duty is payable from

areas such as inner cities.

An increase by fibn in government spending on construc-

The additional spending could increase employment in the construction industry by 130,000, the Institute says.

expectation of a reduction of public spending with a corresponding increase in private sector activity. The latter has not occurred." Owen Luder,

that hy making use of some if not all the tax measures pro-Chancellor the posed. encourage uadly needed confidence and growth in

Analysts forecast modest recovery in OECD states

ONLY A modest pick-up io economic activity in OECD economic activity in OECD few which still regards single States is forecast for this year figure iofiation as probable by Phillips and Drew, brokers inflationary trends will moderate and gnp growth will be better in Europe than the U.S.
In the New Year issue of

upgrading of mad, water and

World Investment Review pub-lished today Phillips and Drew argue that the economic prospects for the year in major industrialised nations will be induced recession by a policynduced recession, as opposed to and Japan. n 1975-76 after the first nil

The paper predicts real grap rowth of only 0.2 per cent in he U.S. in 1982 compared with learly 2 per cent last year. Although Europe may do better with economic activity rising the review.

1.6 per ceot in West Germany. Brokers per cent in Britain and 2.2 er cent in France, the growth ates are well below the verage rates of the 1970s.

Inflation predictions are 7 per ent in West Germany and

Japan. The paper is among the or even possible - in 1982 in

The analysts say currency movements are likely to be current account performances.

interest rates in the first half of 1982 as economic activity reaches a low but the combinatioo of high government borrow-

Brokers James Capel take a second half of the year.

and investment analysts. But Britzin. determined by the interplay of interest rate differentials and

They predict a deterioration in the U.S. current account. a smaller surplus in the UK (2)though some analysts fear the heavily influenced by the UK account could be in deficit replacement of the 1980-81 nil- by the year end) and strong improvement in West Germany

ing and some economic recovery are likely to push U.S. rates back up later in the year says

similar line in their International Board and Currency Review, predicting a short-term fall in U.S. interest rates, also a short-term recovery in sterling nt for the U.S. and about 4 per followed by a decline in the

=Lower power costs 'might s agree have saved Invergordon'

ordon smelter in the Scottish and Hnlyhead in Anglessy (onw lighlands would have been owned by Kaiser Aluminium and ompetitive in the European Rio Tinto-Zinc).
narket had it received elec- Admiral I eing paid by the two other arge UK smelters. That claim was made yester-

ay by Rear-Admirol David Junbar-Nasmith, chairman of ne Highlaods and Islands evelopment Board. British Aluminium anoounced

ne clusure of the smelter nn ecember 29. The shutdown ost 890 jobs directly and could ause another 600 jobs to be

At the time of the closure, r Ronnie Utiger, British luminium's chairman, laid the lame squarely on high power sts. A special power contract id been arranged through the overnment, hut electricity ices had led to the smelter uneconomically cording to the company.

The Invergordon smelter was ne of three set up in the lale 60s under the auspices of Mr arold Wilson's Lahour Govern-ent in ity to reduce the power in the Highlands should untry's dependence on ion also he a major consideration. orted aluminium. The other Rear-Admiral Dunhar-Nasmith are at Lynemouth in said.

RITISH ALUMINIUM'S Inver- Northumberland | run by Alcan)

Dunhar-Nasmith ricity at the same price as that said yesterday that research commissioned by the Highlands and Islands Development Board before the Iovergordon closure was anounced strengthened the case for continuation of production if the price of electricity

we right. Significant could be made at the smelter improve its operating efficiency and reduce costs. The board was also advised that the world price for alumioium was likely to increase from 1983 and improve significantly from

"If the Scottish electricity generating authorities cannot supply electricity to a smelter in Scotland at the same price as a smelter can be supplied in other parts of the UK then something needs to be done about it since the English and Scottish grlds are joloed together," he said.

737 take-offs order

BY ANDREW FISHER

British airlines with Boeing 375 similar to the aircraft vhich crashed in Washington ast week — have been rdered to increase take-off peeds in icy weather. Aviation Civil

Authority (CAA) sent out a elex to the six British comranles which operate 737s nn riday, statiog that take-off peeds must be raised hy heween two and five knots in

old temperatures. fullows directive discussions on the performance of the 737 aircraft in icy conditions. There have been several incidents which prompted these talks and the CAA order.

The CAA said the directive had been in preparation for some time and its appearance just after the Washington crash which killed over 70 people was a coincidence.

The airlines affected by the CAA directive are British Airways, Britannia, Monarch, Air Europe, Orion and Dan Air,

"The Government's broad strategy has been hased on the

RIBA president, claims.

"The Royal Institute believes

duction should rise by nearly 218,000 to 225,500-the fact that very depressed levels of last be producing to meet orders Even so, the iodustry would

cent below that for 1980.

estimated for last year. Although the UK market is 156,000.

UK COMMERCIAL vehicle pro- cent in registrations from rebound in output this year. 30 per cent this year from the manufacturers will increasingly last year to 1,100.

> Output of heavy (over 14.5 tons) three- and four-axle trucks

ket, car derived von production

from 37,000 to 56,000 Motor Business No. 108. The

Opened by the secretar ACRES WESTBOUR Opened by the Liv

Getting through to busy people can be less than easy at times.

Unless, of course, you use the new

Its yellow and blue livery stands out from the ruck of the mail. You can be sure if Il reach the person it's

addressed to. And, so long as you send it in by 8pm. (6pm on Sunday), we'll deliver the very next working day or refund your money.

Just dial 100 (190 in London) and ask for the Telemessage service. Or send us a telex. In either case, we won't charge you for the call. For any message that's simply got to get

through, it's good value at £3 plus VAT for 50 words, particularly as the name and address come free.

For a free leaflet, with all the details including telex numbers, just give us a call.

Two Hull trawlers sold to New Zealand

By Richard Mooney

BRITAIN'S two biggest and most successful trawlers have been sold to a New Zealand company because of the dramatic decline in fishing opportunities for the UK deep sea fishing fleet.

Arctic Buccaneer and Arctic Galliard, both operated by Boyd Line of Hull, bave been bought by Fletcher Fishing of Auckland. This reduces the Hull deep sea fleet, which was 46 in 1974, to 14. The total deep sea fleet, which exceeded 500 vessels in 1974 is now fewer than 90, and many of these are not active.

More ships from the Hull fleet may be sold to join similar ships in offshore oil opera-tions in various parts of the

Boyd Line had offers for the vessels from British buyers, vessels from British buyers, hut these would have meant their being taken out of the fishing industry. The company preferred to self them to Fletcher Fishing, which has also offered two year contracts for a small management team and 60 Humberside trawlermen who will accompany the vessels. The ships will fish out of Auckland.

r Tom Boyd, managing director of Boyd Line, said: "They are the last vessels we would wish to sell but we are being forced to. We need the cash to clear some of our debts and try to keep what we have left going.

"Unfortunately they are our hest assets and with them goes some of the natioo's best assets as they will be accompanied by management and safeguards and nuclear safety crews also trying to find the sort of future which is heing regulatory activities. snatched away from them in their home waters.

out of husiness while Russian factory ships and Dntch trawlers make a profit from British fish." In 1978 Arctic Buccaneer set a

British catching record, pre-viously held by Arctic Galliard. This record still stands. Today a delegation of trawler owners will meet Ministry of Agriculture and Fisheries officials for talks on the industry's problems. They will seek additional aid, fol-They lowing the £25m of special assistance granted to industry last year.

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that advice and we've produced two new booklets on the subject, which are available

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How London adds to the cashflow on world black markets

David Marsh looks at the booming trade in foreign banknotes

LONG-DISTANCE UK long drivers setting out for the Continent are apt to pack wads of DM 100 banknotes into their The London market wallets to pay for deliveries focused on the clearing banks being picked up in Hamburg or plus a cluster of wholesale banks like Trade Development British enthusiasts seeking to Bank and Brown Shipley. The buy their cars at cheap prices big dealers are served by the through dealers in Brussels at myriad collection of bureaux de

banks that tellers ran into years supply shortages. Diplomats and aircrew from countries with shaky local cur-rencies make highly profitable trips to their capitals with bundles of banknotes bought cheaply in London.

times last year bought so many

Belgian francs through London

All this is part of a business which used to be the preserve of enterprising Continental centres like Zurich but is now hooming in London-the twilight and often nefarious trade in foreign banknotes.

encouraged banknote dealing.
One major London clearing bank has expanded its note trading department since 1979 from six to 22 dealers.

change which has sprung up on street corners in the past few British banknote dealing bas grown considerably since the ending of exchange controls in October 1979. This allowed British residents to dabble in maintain some sort of restric-tion on the amount of local curforeign currencies for the first

time since before the war.

A further influence on the Governments in countries market is the increase in foreign ranging from coup-ridden parts of west Africa to Greece, Spain travel. International expansion of illicit or "black" economy in which bills are settled in cash or even Scandinavia want to to avoid registration by tax or avoid the foreign exchange other authorities — bas also strains that can result from a

ing built up abroad. The gap between the official exchange rate at home and the often much lower rate quoted

abroad acts as a barometer of Political instability in a of countries prompted currency outflows, economic stability. leading to a thriving external Unscrupulous operators black market in their currencies. frequently diplomats misusing their immunity from customs Most boliday countries apart searches can make large profrom mainstream western Europe and North America

fits by buying up banknotes cheaply abroad and smuggling them back into the home country. There they can be changed at a much higher rate. rency that can be exported or One bank speaks of regular custom from an African diplomat making frequent currency

smuggling trips to Moscow. Contraventions of regulations lead to stiff fines or even

large pool of local currency be- imprisonment for unwitting notes are often quoted at the holidaymakers and professional lowest prices abroad precisely smugglers alike. domestic authorities restrict

None the less, weeks currencies like the from being re-imported. The Maltese pound and the South African rand have fallen to a steep discount on the external market because of persistent

The Maltese pound, for instance, can be bought in London st 0.80 to the pound and sold at 0.90-against the official rate of 0.73.

Not surprisingly, the higgest loser in recent weeks is the Polish zloty—for which the foreign banknote market is very thin. The rate is shout 3,000 to the pound against the official value of 150.

Large denomination bank-

purchaser to sign a disclaiment

showing that he has been made aware of the regulations. Travel agents have plenty of stories about holidaymakers who fall foul of currency laws spending a few days in

decidedly cramped accommoda

small denomination Greek tion with views restricted by drachma notes rose recently to iron bars across the window. Sometimes banks build u large stocks of illegally exported Banks and travel companies particularly advise holiday-makers against returning home banknotes for which they can not find customers.

In these cases they may arrange a deal with the foreign central bank concerned to repatriate the currency at a discount. It can happen, though, that the central bank takes the currency back only on condition receiving names and addresses of the customers who brought in the money.

CBI urges

pay curbs

THE Confederation of Builds Industry has stepped up it

pressure on the Government curb the size of public sector

pay rises.

Some of the CBI's senion leaders fear that their effect to keep pay rises at low level.

in the private sector may be put in jeoperdy by settlements of public sector pay disputs involving groups such as miners, water workers and in

This morning the CBIs forth nightly news bulletin draw attention to the way public

sector pay has been running ahead of the private sector in

It repeats information cold

of the Treasury's Economic Progress Report, which said that since 1970 the pay of male

trined in the December issue

employees has increased con-

siderably more in the public

sector than in the private

The CBI estimates that settle ments in Whitehall and town

halls have totalled 33.1 per cent =

since 1979, compared with 275; per cent in the nationalised; industries and only 25.8 per cent in the private sector.

railwaymen.

public

sector

Call for guard against nuclear weapon increases

BY DAVID FISHLOCK, SCIENCE EDITOR

THE INTERNATIONAL nuclear by lean times to undercut competitors in safeguards against nuclear weapon proliferation, Dr Hans Blix, newly appointed director-general of the International Atomic Energy Agency, has warned.

Dr Blix also wants more support from the nuclear industry international safeguards, and for his efforts to harmonise nuclear safety.

Interviewed in London, where he is on his first state visit since his appointment late last year Dr Blix said be regards nuclear

Without them, there could be significant international "It's madness. We are forced trade in nuclear plant and

Dr Blix has talked to Lord Carrington, Foreign Secretary, and Mr Nigel Lawson, Energy Secretary, and to the council of the Uranium Institute, London-based think-tank of the international uranium industry. As a former Swedish diplomat and foreign secretary, he is highly sympathetic to the present problems of the nuclear industry. Bin be pointed out that it is already flying with some of the consequences of under-bidding in safegards earlier in its short history.



Dr Hans Blix

"In the long run this type of competition is counterproductive, not only for international security but also for that stable international system which is of such importance to

Governments had to do more to convince countries which bad not signed the Non-Proliferasought would be better assured through the agency.

Going to work abroad?

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make the most of it

if they renounced nuclear

Above all, Dr Blix would like to see the creation of a nuclearfree zone, in terms of nuclear weapons, established in the Middle East. But this would call for a closer involvement of the Arab states with the IAEA than exists at present.

Public perception of the role of the IAEA is distorted, be It could not be expected to give assurances about nuclear material and plant to which it had not been given access. "The main risks of proliferation start where safeguards ends."

Nor could it give assnrances about the long-term intentions of government, such as whether they would always remain with-in the NPT, or that they would never denounce safeguards or contemplate making nuclear

Dr Blix felt strongly that governments must develop a workable system of sanctions for those who transgress against the NPT, or refuse to sign it. At present, the sanctions at its disposal were very restricted, beyond stopping funds for technical assistance tion Treaty (NPT) that the and asking for return of equip-security these non-signatories ment or materials supplied

Wider careers for Demand for Liverpool accountants planned factories BY MICHAEL DIXON, EDUCATION CORRESPONDENT, rises sharply

By lan Hamilton Fazey

INOUIRIES for new factories in Liverpool rose dramatically in 1981 and continued unabated throughout the time of last summer's Toxteth riots, according to figures released by the Liverpool

development agency.

In the six months from April to September there were 437 inquiries, an increase of 86 per cent on the same period in 1986, with the space involved up by 69 per cent at 2.93m sq ft.

The biggest rise in demand was for factories of between 1,000 and 3,000 sq ft. Inquiries were 206 per cent up at 239, confirming other evidence of s surge in start-nps of small

On Friday in Liverpool Mr Patrick Jenkin, the Industry Secretary, revealed that the North-West was well ahead of all regions outside London in taking up the Government'a loan guarantee scheme for small businesses.

Demand for large units is also rising. The agency's figures show 68 requests for help on factories bigger than 10.000 sq ft. 38 more than last year and accounting for 1.55m sq ft.

The figures appear to have been only slightly boosted by the launch of Liverpool's. Speke enterprise zone at the end of Angust, with 75 Inquiries in September, com-

Much of the demand for smaller factories is believed to be from people already on Merseyside.

Mersey docks keep going in Arctic weather

SHIP OWNERS are praising the way the Mersey Docks and Harbour Company and its dock labour force have kept operations moving at the £50m Royal Seaforth complex Aretic weather.

It has not been achieved without considerable cost, however. This will prohably wipe ont the savings achieved by the company's energy conservation campaign over the last 12 months.

Capt Trever Platt, the Hgrrison Line terminal manager, told the company: "These are the worst weather conditions we base encountered at Royal Scalorth, and it is com-mendable that the wheels have been kept turning. The operation has obviously been much slower, but the ships have been moving in and

pected to prevent the costs of STRATEGY to ensure char-

tered accountants retain broad career prospects over the next 20 years, instead of becoming progressively restricted specialised anditing jobs in big professional practices, is published today by the Institute of England and Wales.

The new" policy framework" for education and training leaves room for a change enabling trainees from indus-trial and commercial companies to qualify as members of the institute as well as students from professional firms.

Another proposal is to require members to take more professional training after qualifying perhaps having to complete specified amounts of study over 10 years before being eligible for fellowship status - to avoid overloading or lengthening the period of pre-qualification train-

This change of balance is ex- EC2R 6EQ.

initial training from becoming too high for small professional practices, and so concentrating the development of future chartered accountants almost en tirely in large practices.

because it is these which

price gap between large and

with large denomination notes.

Even from countries like Italy, Norway, Portugal, Sweden, Spain and Iceland, such notes

can be re-exchanged only at a

When banks sell customers

foreign banknotes in amounts

above those legally allowed to

be imported into the country

as much as 28 per cent.

Of the institute's 15,329 students in March 1981, 33 per cent were in firms with up to 10 partners, and only 9 per cent in those with 11-20 partners. The other 58 per cent were being trained by the 41 largest

Although the document says changes will be made smoothly and only after full consultation the admission of trainees work ing in industrial and commer cial companies will be officially considered by the institute's council st the end of the year. Education and Training - 0

policy framewrok. Free from Institute of Chartered Accoun tants in England and Wales,

Catholic bishops condemn Ulster teacher training plan

THE 90 per cent or so of Nor- denied by the Government and thern Ireland's Roman Cstholics by the Minister at the centre of who sttend Sunday mass, yesterday heard an sttack by their bishops on the Government's proposals for rationalisation of teacher training in the province. British ministers have found themselves unwillingly embroiled in one of Ulster's most sensitive religious issues as they try to cope with a drop in the number of school pupils and a surplus of teacher training

places.

The bishops declared yester-day "Education Sunday" and, in s letter read st all masses, they claimed the Government's proposals "contravene religious

freedom and the rights of con-These charges are strongly the row, Mr Nicholas Scott.

His policy is based on the recommendations of a committee chaired by Sir Henry Chilver, which said that the two Catholic colleges — one for men and one for women - should amalgamate and move to the site of the state (and therefore largely Protestant) college at Stranmillis in South Belfast.

The numbers of Protestant children st school is falling faster than the number of Catholics, and the awkward implication is that, if student teacher numbers are reduced evenly, the small proportion of Protestants teaching in Catholic schools would rise sharply.

National Savings suffer

1981 on a quict note, with net entirely on National Savings receipts in December falling on the month to

This brought the total amount received by the Department of National Savings nine months into the current financial year to £2.90bn. The Government bas set a target of £3.5bn from National Savings in 1981-82, leaving another £600m to be acquired in the remaining three

National Savings in Decem-

NATIONAL SAVINGS ended ber were concentrated almost Certificates, both the indexlinked-still popularly known as Granny Bonds—and the non-index-linked. The index-linked sold a net amount of £92.6m. little more than half the amount sold in November, while the nonindex-linked sold £81m-around

two-thirds of November's figures. November's figures were boosted by the launch of the 23rd Issue, a non-index-linked certificate offering the highest yield ever of 10.51 per cent net

Rate watcher PETERBOROUGH City Council 2 fer has been urged to appoint and specialist consultants at £10,000 a year to protect the £14m mate; in (1) able value of the Queensgate biggest shopping complex which opens this spring on a 15-acre site in the city centre et a cost of £80m.

Treasurer, warned the council b. that many stores and shops would have the benefit of specialist valuation advice in of chartered surveyors for two years "to protect the interests wild:

Studio go-ahead

PLANS FOR Central Tele Control vision's new £15m East Mid will be to the control Lane. lands studios in Lenton Lane, Nottingham, have been keep to the approved by Nottingham City was the

planning committee but there is a ping still no settlement of the elec- Central tricians dispute which has protect prevented the start of problem grammes for the East Midlands dimee

BABCOCK CONTRACTORS OF PL the UK is to collaborate with the same Perron Engineering of Canadi land of to supply turnkey "mini the steel mills, it was amounced here

Babcock, part of Babcock International, will manage and plan the supply of materials for the supply of the supp the steel plants while Ferror part of the Canadian Costee group, will design the mills.

Ouinton Hazell may lack buyers

THE For Sale sign has been put up on Quinton Hazell, which claims it is Europe's largest maker of automotive replacement parts. Its parent, Burmab Oil, says QH has no role in Burmah's future strategy and this would naturally affect its growth and development. But who would want to buy QH when the UK automotive industry is only gradually emerging from the deepest recession in living memory? Huge losses of money and jobs

have been the order of the day. There seems room for little growth either in the UK economy as a whole - or in the automotive sector in particular. But any attempt a company makes to offset low growth at bome by traditional exporting methods is blunted by the high value of the pound, which re-flects the oil in the North Sea rather than Britain's relatively low productivity and high cost

of production. With this in mind, OH has been trying to build up its operations outside the because, in spite of the "big-gest io Europe" boast, it still depends heavily on its busi-

nesses in Britain. This overseas expansion requires cash, and Burmah, with depots in the UK operating an other fish to fry. feels disin-

Who wants a spare car parts maker? asks Kenneth Gooding

Any buyer of QH will, therefor, have to be a substantial organisation willing to put up embraces the operations outside the cash for overseas expansion as well as the purchase price (assets employed are valued at f50m). If, that is, the new parent goes along with the ideas of the QH management team, led by Mr Ray Sollett, chief executive since October 1978. He insists that OH is a fully-integrated group and it would make no sense to split it into chunks to be sold off piecemeal. The activities are grouped in

four principal divisions: Quinton Hazeli Automotive. manufacturing operations with factories producing a whole range of components for cooling systems, brakes and transmissions, steering and suspension, silencers and exhausts. · Partco, a national wholesale distribution company with 150

depots selling parts to the motor trade. About 40 per cent of the QH factories' output goes to Partco. • Standard Motorists' Centres, the retail division with 120

-another good customer for about 7,600 world-wide.

the UK. The major element is Quinton Hazell Superite, the quoted South African business which is 80 per cent owned, with the rest of the shares in public hands. It is a miniature version of the UK perent and has an £8m turnover.

There is a similar manufac-turing (silencers, hrakes) whole-saling, retailing business in Australia and wholesaling companies in Italy, Holland, Belgium and France, all wholly owned, And in Ireland, QH has a reconditioning plant for clutches as well as the whole saling operations.

As for exports from Britain a little goes to a lot of countries -134 at the last count QH has its own sales company in the

Turnover of QH as a whole in 1980 was £144m and profits were £6.3m, down from £11.2m. Mr Sollett says the figures for 1981. will show a small profit when they are known ... There are three main UK fac-

So, to return to the original question, who would buy? question, who would buy?

It seems reasonable to rule blind out the UK automotive component groups, which have been attempting to slim down their home operations rather than acquire more.

In the not-too distant past, the U.S. component groups have been attracted by British companies. Dana bought Tunne Manufacturing, which make transmissions and clutches; an also Brown Bros, the automotive

also Brown Bros, the summony
parts distribution business.
Rockwell bought Wilmo
Breeden, another summons

components maker. The evidence suggests the recently they have been wishing they had not bought them.

ITT has shown some enthusiasin for expansion of the European automotive interest and there is a surface in the state of the stat

and there is a trading linbetween ITT's brake-making subsidiary in West Germanian Alfred Teves, and OH Da recent management changes ITT mean the expansion policy could be changed. Perhaps a constomerate like the Hanson Trust or Lond

might cast an eye in OH direction. But the betting to industry is that Burness more likely will have to support exhanst and tyre-fitting service tories and the group employs unwanted offshoot for time to come.

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The basic rules of saving and investment

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pay tax on the rent you receive? We know the

answers to the tax questions which arise when

campaign to woo Plymouth voters

NOT SINCE Labour's landslide victory in 1945 have the Con-servatives suffered the humiliation of seeing all three Plymouth constituencies in hostile

.. It is a measure of the impact which the SDP-Liberal alliance has made in the city in a few short months that, even though the next general election is still over the political horizon, the warning lights are already flashing in Tory nerve centres. Dr David Owen

Leading the attempt to persuade Plymouth's voters to reject both the existing major parties will be Dr David Owen, MP for Devonport, who just under a year ago signalled the beginning of a significant development in British politics by breaking with his constituency Labour Party.

The astonishing level of mblic support shown for the SDP in recent by elections and public opinion polls underlines the importance of Dr Owen's determination to ensure that the revolt by the moderates against the hard Left's growing dominance over the Labour Party did not peter out in a series of ineffectual gestures.

Since its uncertain beginnings he has been a central driving force in the SDP's development. He is certain to retain a pivotal position when Mr Roy Jenkins eventually returns to the Commons and takes over the parliamentary leadership.

Foreign Secretary at 38 — when appointed to the office in 1977 he hecame its youngest occupant since Anthony Eden-Dr. Owen is one of the com-paratively few British politicians who can be sure of instant recognition on the international

False image

Arrogance is the charge most frequently levelled against him by detractors. Mannerisms which betray a readiness to be both aloof and combative ("talks like a Guards officer." says one Old Etadian Tary who knows him well, helps to perpetuate what fliese closest to him insist is a false image.

Dr Owen first became a Plymouth MP in 1966, ending an 11-year period of Conservative domination which began when Mr Michael Foot, who scored a dramatic victory at Devonport in 1945, suffered the first of two unding defeats inflicted on him his native city.

In February 1974, after a changes which restored Ply-mouth to a city of three con-stituencies, Dr Owen switched from Sutton to capture Devonport from Dame Joan Vickers, who had twice triumphed over Mr Foot. He then beat off her grempt to regain it eight months later.

Another massive rejigging of publical boundaries in Plymouth will take effect before the next general election. Many voters in the existing Devonport, Drake and Suston divisions will find themselves with different electoral neighbours as a result.

Three newly-formed constitunames of Plymouth North, Plymouth Central and Plymouth
Plymouth Central and Plymouth
Bast, are proposed. Calculations
Which did not take the SDPliberal alliance into account
suggest that had Dr Owen
remained in the Labour Party and fought Plymouth North he would have escaped for the first time the perils of being in Westminster's marginal seat hrigade. Plymouth North will include significant sections of the existing Devoupont constituency.

While his supporters argue that such old yardsticks are now largely irrelevant—and some are bold, enough to assert he is capable of winning any one of the three seats—it is notable that Dr Owen is keeping his cartinus and the continue are the seats—at t

Some of the SDPs top echelon are urging him to eschew short term heroics and choose the constituency most likely to provide a sound and enduring political base. They believe he provides the best guarantee that the party does not become a mushy centre grouping, but retains the cutting edge needed to clear a

In his concluding article on the Liberal SDP alliance in the West Country, Ivor -Owen looks at the in the face of changing

way through some of Britain's most deep-seated problems.

constituency

boundaries

Others advocate a more adventurous course, and point to the good social mix in the SDP's impressive membership in the Plymouth area. This has provided further confirmation that, even before his departure from the Labour Party, Dr Owen enjoyed a good deal of broad based support which crossed conventional party

One of the reasons for this is the decisive role he played when Navy Minister in securing the future of Devonport Dockyard, on which the prosperity of Plymouth and much of the surrounding area depends. It was his influence which

resulted in Devonport getting the capacity to refit nuclear submarines. That has proved the key factor in averting closure or rundown, the fate facing Chatham and Portsmouth Optimism among SDP sup-porters in Plymouth is also encouraged by the continuing disarray in the Labour ranks atill reeling from Dr Owen's defection-and the evident malaise in the local Conservative

organisations. In contrast to earlier years not one of the three Conservative constituency associations employs a full-time agent. Attempts to reach agreement on financial arrangements, which would enable a joint appoint-ment to be made, have failed.

The absence of the skilled professionalism of the Conservative Party machine—an omission which will doubtless be repaired well in advance of the next major poli—is a bonus for Labour. A full-time agent looks after Labour's interests through-

Main hope

The Devenport division also reports a bigger response to its fund raising efforts than was achieved a year ago and has already kined up an able prospective candidate. He is 31-year-old Mr Julian Priestley who holds an administrative post in the European Assembly. He has twice tried to secure election for a Plymouth seat. Steering clear of Dr Owen would improve his prospects of proving that third time can be

In any event, Mr Priestley is likely to be Labour's main hope of winning a constituency west of Bristol. For all his outstanding record

of achievement at hoth local and national level it is unlikely that Dr Owen will risk standing in Plymouth East, largely based on the present Sutton division where Mr Alan Clark secured an 11,287 majority for the Conservatives in 1979.

Plymouth Central could turn out to he Dr Owen's final choice. Apart from a slice of the present Devonport division its largest component will be made up of parts of the present Drake constituency. The incum-Conservative MP. Miss bent Janet Fookes, has needed all her vigour and tenacity to retain a majority and survived by only 34 after a succession of

recounts in October 1974. One thing is sure. The con-stituency contested by Dr Owen will he the centre of media attention, not least because Mr Foot has promised to participate in the all-out campaign which Labour is determined to mount against him.

Discount house links up with commodity broker

BY DAVID MARSH

GERRARD AND NATIONAL, a between Gerrard and Inter leading City discount house, is setting up a joint company with London commodity broker Inter Commodities to operate on the financial London olamned futures market

The unique link has been forged to pool the experiese of the two companies in money and commodity trading.

The financial futures market, due to start in September, allows currencies and interest rate instruments to be traded like commodities. The City will growing competition in face financial futures from diversified U.S. broking firms which

trade both money and commodities. So the pooling of resources

Commodities may be only the first of a number of link-ups among London companies planring to trade on the exchange. The new company, will act

rimanily as a clearing member of the London exchange. It intends to take part in the cleaning facilities which will be organised by the International Commodities Cleaning House.

Mr Brian Williamson, a director of Gerrard, said the two companies planned to pool their skills. Gerrard had particular expertise in hanking while Inter Commodities would contribute its experience in commodity trading and on the futures market in financial

Owen leads SDP Strike may close port Welsh miners hold key to pay ballot by ROBIN REEVES, WELSH CORRESPONDENT

BY ROBIN REEVES, WELSH CORRESPONDENT

By Brian Groom, Labour Staff to the result of the national

THE PORT of Southampton, scene of more than 10 months of disputes, faces a new crisis which could result in closure

this week

Cargo handling is almost at a standstill because of a strike by the port's 140 foremen, after being reduced to a third of capacity since October by an unresolved dispute with 150 cargo checkers on a new shift system. Only the cross-

Channel ferries are working.
The main employer, the
British Transport Docks
Board, last week sald it would resume three-shift working in the container berths from the weekend, in anticipation of a settlement with the checkers. But the checkers threw out the peace plan, and the fore-men voted to strike. Today the Docks Board

must either begin paying the port's 1,400 dockers as if normal working were resumed—a big expense on top of the millions lost so far because of disputes or risk a confrontation

The dockers' insistence that other groups, such as the foremen and checkers, should not be allowed to work extra shifts in overtime, which give them potentially higher earnings, is at the root of the troubles.

THE DELAYED strike ballot of Besides holding up the of Wales could also encourage dards. If they chose to accept 25,000 miners in South Wales ballot, last week's severe a moderate stance. will take place tomorrow, amid weather also prevented Welsh signs that it may hold the key miners' leaders from holding South Wales NUM's vice- a ballot on the Coal Board's offer explain their reasons for recomof a 9.5 per cent pay rise.

the way for distribution of strike action "if necessary." ballot papers to the many Welsh collieries cut off by last fields elsewhere may not have Cormley's last-minute interven-week's heavy snow. South Wales backed the National Executive's tion, had angered many miners miners account for some 10 per recommendation in sufficient and would, he felt, ensure a cent of the total voting strength strength to secure the 55 per bigger vote against the offer.

area is left-wing, a big majority miners' voting in favour of the the executive could never NUM investigation and an vote against the pay NCB's offer. The acute un-recommend an offer involving eventual full apology by the offer is by no means certain. employment affecting the whole a cut in miners' living stan-NUM headquarters.

cent support for strike action, Although traditionally the could well influence the Welsh

severe a moderate stance. a series of pithead meetings to president, said he would be the NCB and the Government,

very surprised" if there was mending rejection of the offer a vote to accept the 9.5 per cent The weekend thaw cleared and drumming up support for offer. Sir Derek Ezra's warnings of no more cash, whatever Weekend reports that coal, the ballot result, and Mr Joe

At the same time. Mr Dutfield was careful to stress that

it, that was the mlners' choice Even so, Mr Des Dutfield, the It-would, however, be treated as

Tomorrow's poll will take place uoder conditions of strict secrecy. Local union officials have been instructed to bar the Press frum colliery premises or risk the men's votes being disqualified.

The ban on the media follows unfounded Press allegations of ballot rigging in South Wales a few years ago, which led to ar

sign of weakness by both

annoal delegate meeting of the National Union of Journalists. Journalists are also concerned over racial bias in the media and "blngo" wars weakening the financial position of the popular papers, and have called for

mergers and the appointment of editors to he subject to journalists' approval. The merger issue is likely to be the most controversial one of the ADM, to be held at the end of March. Talks between the unions are said by both teams of negotiators

Journalists

at merger

WIDESPREAD opposition to

the proposed merger with the

print craft union, the National

Graphleal Association, is

revealed in motions to the

uneasy

By John Lloyd,

to have gone well. NUB chief named

LEADERS of the National Union of Blastfurnacemen elected Mr Nicholas Leadley, 57, general secretary from April 26, when Mr Hector Smith retires. Mr Leadley represents northern

Confederation. The two are likely to combine soon.

Occupation of Dunlop factory to continue

plant at Brynmawr, South Wales, voted yesterday to con-tinue a five-week occupation of their factory. They rejected an ultimatum

the market for do-it-yourself

The workers' action was to get away with it."

originally aimed at securing withdrawal of 60 redundancies and guarantees of further investment to underpin the plant's from the Dunlop management future. Dunlop's decision to to quit the site hy 7 am this close the factory outright will morning or lose all severance mean about 600 redundancies.

According to Mr George The company said ten days Howard, trade union convener ago that it was closing the at the factory, the workers factory and withdrawing from have been inundated by offers have been inundated by offers of support from other factories

WORKERS AT the Dunlop factory occupation which began the same medicine if the com- there is a negotiated outcome, group's Semtex floor coverings on December 15. pany's management is "allowed Mr Jacobs said.

Mr Geoffrey Jacobs, district officer of the main union involved, the Transport and General Workers Union, said the decision to reject Dunlop's ultimatum — taken at a two-hour meeting yesterday — was unanimous.

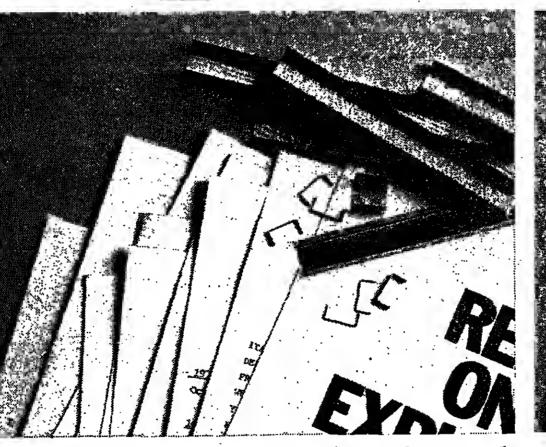
"They realise that this could now mean a confrontation with law and involve people rubber and carpet tiles because in the Dunlop Group which fear going to-prison. But they accept cussions of the adverse effects of the they may be threatened with it. The dispute will go on until weekend.

The workers had been told by the management that they were in breach of their contracts but that Dunlop was willing to make equal to the statutory minimum redundancy terms, provided the occupation ended this morn-

Earlier Mr John Miller, national officer of the Transport Uoion's chemicals group had cussions with Dunlop over the

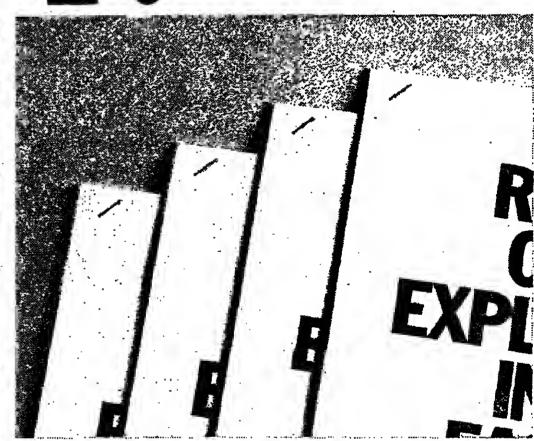
region members.
The NUB has been in merger talks with the much higger Iron and Steel Trades

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KINGDOM OF MOROCCO

OFFICE NATIONAL DE L'EAU POTABLE

CALL FOR TENDER No. 24/DE/81. AGADIR DRINKING WATER SUPPLY

The Office National de l'Eau Potable (ONEP) have issued an international call for tenders concerning

the project of supply of drinking water to the town of Agadir.

supply and laying down of pipes Ø 600/8500 ml
 and additional equipment such as joints and taps
 additional works such as man-holes, various

Only companies from countries member of THE WORLD BANK and SUISSE may participate.

Correspondence should be in FRENCH.

Tender documents may be obtained from the issuing

Division Equipement Quartier Administratif. RABAT

specifying on each envelope the title and date of the

Please write to: Office National de l'Eau Potable

Summary of the works involved:

authority at a cost of DH 1.000. Closing date: 24/03/1982.

__ laying out of trenches

CONTRACTS AND **TENDERS**



TENDER PREQUALIFICATION OATAR GENERAL PETROLEUM CORPORATION HEADQUARTERS BUILDING - WEST BAY

Oatar General Petroleum Corporation will shortly invite bids for the complete construction contract for the New Headquarters Building, West Bay, Doha, Qatar.

The New Headquarters Building comprises approximately 21,000 square metres of high standard four storey offices over lower parking floors for approximately 340 cars. The New Headquarters is sited adjacent to the existing QGPC Headquarters and the works include various connections between the two buildings.

The works will comprise: piling by approved subcontractors, general building works, engineering services including air conditioning, finishings, fixed furniture and equipment and external works including planting. Facilities to be provided include a computer centre, cafeteria, office accommodation, conference rooms etc.

Only prequalified firms will be invited to participate. Acceptance for prequalification will be limited to firms who have during the last 5 years—built at least one project of similar type, size and quality and—executed at least 3 major projects in the Gulf

Interested firms should submit applications for prequalification in duplicate not later than January 21 1982.

1st copy to be sent to:

Telex: 4343 PETCOR DH

The Manager, Engineering and Construction Dept. QGPC (HQ), PO Box 3212, DOHA-QATAR.

and 2nd copy to:

Weidleplan Consulting GmbH, Planer Architekten Ingenierue, Postfach 30 08 09, D-7000 Stuttgart 30, WEST GERMANY.

Telex: 722313 WEIDL D

in covers stating "PREQUALIFICATION-QGPC HEADQUARTERS BUILDING DOHA"

Application must include:-

bonds will be required.

- Full details of company including forms of incorporation and clarification of relationship of any proposed joint venture.
- Complete financial statements (audited) for the last five years including annual turnover in Qatar and the Middle East.
- A list of current projects quoting value, involvement and percentage completed with contract completion date.
- A list of comparable completed projects with brief details of value, involvement, programmed and actual dates of completion.

It is intended to invite bids in March 1982 from a selected list of prequalified firms who will be notified accordingly by QGPC. The Tender period will be 12 weeks and Bills of Quantities will be provided. Tender

The contract period will be approximately 27 months and the contract will be turnkey fixed price.

BAHRAIN LIGHT INDUSTRIES COMPANY

FURNITURE PLANT

INTERNATIONAL PREQUALIFICATION OF EQUIPMENT SUPPLIERS FOR WOODER FURNITURE MANUFACTURING

The BAHRAIN LIGHT INDUSTRIES COMPANY wishes to prequalify firms interested in tendering for the equipment of the future furniture plant in Bahrain, The Gulf.

The plant (approximately 9,000 m²) includes a boardline, veneerline, solid woodline, surface treatment line and an upholstery line to produce -on an industrial scale-furniture, chairs, doors and upholstery.

Tender documents are expected to be available in February, 1982.

Firms with experience in similar works and who are interested in the delivery, erection and commissioning of the complete plant equipment, should send prequalification documents with information about the firm, list of references and their abilities for export financing not later than January 31, 1982, to:

> MOTOR COLUMBUS Consulting Engineers Inc. Parkstrasse 27, 5401 Baden -Switzerland

KINGDOM OF MOROCCO

OFFICE NATIONAL DE L'EAU POTABLE

CALL FOR TENDER No. 29/DE/81

The Office National de l'Eau Potable (ONEP) have issued an international call for tenders concerning the project of supply of drinking water to the town of AGADIR from the dam of Tamzaourt (30 kms away) (financial participation of The World Bank).

The call is for the design to the completion of the works of a purifying plant with a debit of 350 1/sec.

Correspondence should be in FRENCH

Tender documents may be obtained from the issuing authority at a cost of DH 1,000. Closing date: 24/3/1982.

Please write to: Office National de l'Eau Portable Division Equipment **Quartier Administratif**

specifying on each envelope the title and date of

KINGDOM OF MOROCCO

OFFICE NATIONAL DE L'EAU POTABLE

CALL FOR TENDER No. 25/DE/81

The Office National de l'Eau Potable (ONEP) have issued an international call for tenders concerning the project of supply of drinking water to the town of TIZNIT and area from the Youssef Ben Tachfine dam on the Oued Massa, with a debit of 145/1/sec. The project will be undertaken with the financial participation of the KRENDISTANSTALT FUR WIEDERANF BAU (K.F.W.).

The works have been programmed in three stages: No. I -PIPES

No. III-ELECTRO-MECHANICAL EQUIPMENT No. IV—PURIFYING STATION

Details on each part-project may be obtained from the Export Intelligence Service, B.O.T.B., 50 Ludgate Hill, EC4M 7HU — telephone: 01-248 5757. Tender documents may be obtained from the issuing authority at a cost of DH 1.000.

Closing date: 24/03/1982.

Please write to: Office National de l'Eau Potable Division Equipement Quartier Administratif

specifying on each envelope the title and date of the

FOR AGRICULTURAL PRODUCE INTERVENTION BOARD

INVITATION TO TENDER 1 Loading shall commence no series than 15 February 1982 and no later than 22 February 1982.

INVITATION TO TENDER 2 Tenders are invited for the urgent supply of 2,000 tennes of bassed soft wheatflour for delivery on a feb stowed and trimmed basis to in EEC port. Loading shell commence on earlier than 35 February 1982 and on later than 25 February 1982.

The price for the supply and transportation costs of the flour for the above tenders will be determined on exemination of the tenders which must be submitted by noon on Wednesday 27th January 1982 to:

HOME GROWN CEREALS AUTHORITY
Hamlyn House, Highpate Hill, London N19 5PR

Notice of invitation to tender together with tendering forms may be obtained from: ained from: Branch B (Cereala), Internal Matket Omision, Intervention Board for Agricultural Produce, Fountsin House, 2 Queene Wolk, Reading 8G1 7QW Tel: Reading (0734) 583626 Ext. 365/276

TANZANIA ELECTRIC SUPPLY COMPANY LIMITED (TANESCO) Invite Prospective Tenderers for

THE CONSTRUCTION OF THE MTERA HYDRO-ELECTRIC POWER PLANT.

PHASE III DEVELOPMENT OF THE GREAT RUAHA RIVER.

The Tanzania Electric Supply Co. Ltd. 3.3 The Mtera site is located on the Great (TANESCO) intend to harness the available head in the Great Ruaha River in connection with the recently completed Mtera Dam by constructing a Hydro-Electric Power Plant.

The Government of Tanzania has applied for international development credits from the International Development Association (IDA), the Norwegian Agency for International Development (NORAD), the Swedish International Development Authority (SIDA), and from other agencies for the construction of the Mtera Hydro-Electric Power Plant. It is intended that proceeds of these credits will be applied to payments under the contracts for the project. The credits are expected to be available about mid -1982.

The works for the Micra Power Plant will comprise all civil, mechanical and electrical works for the installation of 2×40 MW generating capacity in an underground power station near the existing Dam.

3.1 The following Tender Documents are intended to be issued for the Mtera Power Plant during April 1982.

TD 11. Civil works, including ventilation and various temporary facilities,

TD 12. Penstock Steel lining and Gates,

TD 13. Turbines, Pipework and Crane, TD 14, Generators,

TD 15. Transformers, and

TD 16. Other electical equipment incl. 220 kV switchyard

3.2 The civil works will comprise the construction of a short headrace tunnel, two vertical penstocks (length about 100 m each) an underground powerhouse, an approximately 10 km long tailrace tunnel (in total about 850,000 m3 of rock excavation), roads and various housing and storage facilities.

Ruaha River in the Iringa region, Tanzania about 650km by road from Dar es Salaam.

Contractors wishing to be considered for the civil, mechanical and/or electrical works should submit the following information for prequalification as evidence of their capability.

4.1 Records of similar projects completed in the last ten (10) years. 4.2 Financial statement of last year and a sum-

mary of last three (3) years.

4.3 Detailed reports on company structure. 4.4 Curriculum vitae of key staff giving educational background and employment ex-

4.5 Details of equipment and resources which will be available for the work.

Prospective Tenderers are invited to register themselves by submitting in duplicate the documents in 4.1 to 4.5 above oot later than March 15th, 1982.

Envelopes with documents are to be marked: Mtera Power Plant Project, Tanzania Prospective Tenderer

And sent as follows:

1 Copy to: TANESCO P.O. Box 9024 Dar es Salaam Tanzania

1 Copy to: SWECO P.O. Box 5038 S-10241 Stockholm Sweden

Prequalified Tenderers will be notified when the respective Tender Documents are available and will be required to purchase three sets of Documents. The cost of the three sets will be US Dollars 400 for each of the six contracts specified under 3.1 above.

COMPANY NOTICES

GREATERMANS STORES LIMITED NOTICE TO SHAREHOLOGES DIVIDENDS ON PREFERENCE SHARES

72.
A divide nd at the rate of \$^* cor amount for the sie minints ending 28th February, 1982—cvalvalent to contract the size of the size o errence shares—Dividend No.

70.

A dissigned at the rate of 5°, per annual for the sie meeting coins 28th Februar, 1982—continuite to 5 zant, per share

5 zant, per

able deduct the non-midrat share bolders' tax of 15% from dividends pasable

For the gurpose of paving the above the for the gurpose of paving the above the share Registers, in respect of the polor Preference Sharts will be closed from Jon January, 1982 to 12th February, 1982, but dais inclusive Discend theques in payment with be socied on or about the 28th February, 1982.

By Order of the Reard D. C. CDAGG, Secretary, 1982, but dais inclusive C. CDAGG, Secretary, 1992, and 1992, but dais the 28th February, 1982, but dais the 28th February, 1982, consistency of CDAGG, Secretary, 1992, but dais the 28th February, 2001

Bouth Africa Transfer Secretaries; Control Renistrats Limited, 1988, but of 1988,

NOTICE OF PURCHASE EUROPEAN INVESTMENT BANK

BANK
USSS.050000 1117. RONDS OF
1980, DUC 15th JANUARY 1292
Parsont to the levens and conditions of the Loan, notice is hereby
olven to Southelers that, during that
the conditions of the Loan, notice is hereby
divelve-manth Ortion ending 14th
January 1982 USSS.200.000 grienioal
coroder of such Sonds were purchased
in hall-slatten of the Loncerned Purchase found obligation.

Outstanding amount on 15th
January 1992 USST0.400.000 princyal amount. Dates 13th January 1982 EUROPEAN INVESTMENT BANK



RBC INTERNATIONAL INCOME FUND LIMITED

BEARER DEPOSIT RECEIPTS BEARER DEPOSIT RECEIPTS
An interim dividend in respect of the pende anded 3rd Newember 1361 has been reclared and will be beyable on the 19th January 1382. US9053 will be prid ngainal prosentation of Coupan No. 3 of the beauti depositary receipts at the Fand's Depositery.

THE ROYAL BANK OF CANADA (CHANNEL ISLANDS) LIMITED P.O. 804 48
St. Julian's Avenus St. Julian's Avenus St. Pater Pric. Guernset (Guernset)
Guernset (Guernset)

CITY OF VINA DEL MAR 5% LOAN 1913 NOTICE IS MEREBY GIVEN that all the outstanding bonds of the above-mentioned loan will be redeemed at par on 25th Jana-ary 1002 from which date all interest thereon will cease. These honds when pratented at the office of Mioland Bank Limited Stock Exchanges Services Department for redemption must have the coapon dared 25th July 1982 and all abstrauent coupons, attached.

The usual interval of four clear days will be repoised for geardination. Midland Bank Ltd.
Slock Exchange Services Dept.
Mariner House, Popys Street
London ECSN 4DA. BANQUE INTERNATIONALE

POUR L'AFRIQUE

OCCIDENTALE US\$20,000,000 Floating Rate 1978/83 The rate of Interest applicable

for the six months period beginning on January 15, 1982 and set by the reference agent is 151% annually.

Grédit National USD 75 millions floating rate 1978/88

The rate of interest applicable for the six months period beginning on 15th January 1982 and set by the reference agent is 151% annually.

ART GALLERIES

LEFEVRE GALLERY, 20. Bruton St. W1. 01-83 1572/3. AN EXHIBITION OF IMPORTANT XIX and XX CENTURY WORKS OF AR7. Mon-Fri 10-5. MARLBOROUGH 6. Albemarie St. W.T. ALEX KA72 — RECENT PAINTINGS Until 6 Feb. Mon-Fri 10-5.20. Sat 10-12.30 pm. MATHAF GALLERY, 32. Mottomb Street. London. SW1 7sl. 235 0010. Specialists in 10th Centery and Contemporary Paintings in ARABIA.

WHITECHAPEL ART GALLERY. White-chaoat High St. 33T 0107. Tube Algaer East. To 28 Jan. BRITISH SCULPTURE IN THE TWENTIEN CENTURY. Part 11 1951-00. Son-Fri 11-6. cl. Sat. Adm. 51 (50g). Free Mon 2-6. AGNEW GALLERY, 42 Old Bond St. W1. 629 5176. 168th ANNUAL WATER-CDLOUR EXHIBITION Until 10 Feb. Mon-Fri 9.30-S.30: Thurs until 7.

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THEATRES

WARTHOUSE, Donmat Theatre, Earlham St. Covent Gdn. Box Office 836 G808. ROYAL SHAKESPEARE COMPANY WAREHOUSE FESTIVAL 10 Jan-2 Feb., Ton't 7.30 pm AUNT MARY a new play by Pam Gette. directed by Walter Donohole, read by RSC Company Members Tomor, discussion of the Future of Drama in Theatre & Television, Seats £1,50.

WESTMINSTER. CC S 03-034 0283. GAVIN 'AND THE MONSTER. A Lentery advector omsteal. Data Sec. Mon-Set 2.75. fri & Set 6.45.

WYNDHAM'S. 5 836 3028. CC 379 6565.
Group reductions 836 3962. GZILIN
BLAKELY, ROSSMARY HARRIS IN
ARTHUR MILLER'S ALL
DIrected by MICHAEL
BLAKEMORE,
Man. F1 7.30. Sat 4.30 & 8.00. Wed
mat 2.30.

YOUNG VIC (Waterloo). 028 5363. Tomor. Wed & There 7.30. Set 2.00 KING LEAR, Fri & Set 7.30, All Seats £2.30 JOHN MORTIMER'S CASESOOK



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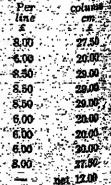
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BUSINESSMAN'S DIARY

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| Date | Title |
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| Jaπ 19-22 | Which Computer? Show (01-747 3131) |
| Јап 20-27 | International Hotel and Catering Exhibition- |
| DE 20 21 11110011 | THE THE PARTY TO SEE CHEFTING EXTRACTION - |
| - 00 on | HOTTELYMPIA (021-705 6707) |
| Jan 23-30 | Ideal Homes, Food, Trades and Leisure Exhibition |
| | (0243 687381) |
| Jan 24-27 | Lesthergoods, Luggage and Handbag Fair (01-407 |
| | 1582) |
| Jan 26-28 | Controller The The Later of the |
| Jan 20-28 | HIREX 82-Exhibition and Conference of the |
| | - Hare Industry (0622 679845) |
| Jan 30-Feb 3 | British Toy and Hobby Fair (01.701 7127) |
| Feb 1.4 | Photography at Work Exhibition (01-688 7788) |
| Feb 24 | COMPETER 100 Plantanes Assessment 1001 |
| 7 00 7 7 | COMPELEX 82-Electronic Components Exhibi- |
| | tion (01-629 4304) |
| Feb 7-11 | International Spring Fair-Gifts (01-855 9201) |
| Feb 9-12 | Information, Technology and Management Exhibi- |
| | tion and Conference—INFO 82 (01-547 1001) |
| Feb 10-12 | Brown British County Street HALO 97 (01-05) 1001) |
| Feb 10-12 | Western Building Show (01-543 8040) |
| F-60 10-12 | Ceremer Tile Exhibition and Conference TILEX |
| | (01-450 0465) |
| Feb 12-14 | Crusts Dog Show (01-493 7838) |
| Feb 14-17 | International Men's and Boy's Wear Exhibition |
| | (021 705 6707) |
| | |

EXHIBITIONS

| OVERSEAS TRADE FAIRS AND |
|--|
| Jan 14-25 Boat Show (01-439 3964) |
| Jan 19-22 Europipe 82 Construction and Maintenance of Pipelines Exhibition and Conference (6727 63213) |
| Jan 22-51 International Commercial Motor Show (02298 |
| Jan 24-28 |
| Jan 25-31 Do-it-yourself exhibition—KARWEI (01-286 1951) |
| Jan 29-31 International Boat Show (01-486 1951) |
| Feb 5-14 International Boat Show (01-486 1951) |
| Feb 3-15 Equipment and apparatus for drug production and testing exhibition (01-235 2423) |
| Feb 10-13 International Trade Fair for Household Appliances. |
| Fittings and components—DOMOTECHNICA (01-409 0956) |
| Feb 13-16 International Trade Fair for Watches, Jewellery |
| and Selverware—INHORGENTA (01-486 1951) |

BUSINESS AND MANAGEMENT CONFERENCES

| | DODINE | O AND MANAGEMENT CO |
|---|---------------------------------|---|
| | Jan 19 1 | CBI: Jordan—the new 5 year Development Plan |
| • | Ten 16.01 | (1981-86) (01-379 7400) |
| | Jan 19-21 | Crown Eagle Communications: UK Government |
| | Jan 20-21 | Contracts (01-636-0617) |
| | Jan 21-22 | FT Conference: World Coal Markets (01-621 1355) The Economist: Europe and Japan—Competition, |
| | Jan 21-22 | Collaboration of Conference and Japan—Competition, |
| | | Collaboration or Confrontation in the 1980s? |
| | Jan 25-29 | London Business School: Management within the |
| | , , , , , , , , , , , , , , , , | |
| | Jan 25-29 | Manchester Rusiness School The Microchin |
| | | Manchester Business School: The Micro-chip Society—planning for the future (061-832 |
| | | 7972) |
| | Jan 26 | ESC: Pricing for profit (057282 2711) |
| | Jan 27-29 | ESOMAR/EFMA: How research can help financial |
| | | organisations communicate internally and |
| | | externally (01-251 4549) |
| | Jan 27-28 | Meridian Conferences: Capitalise on Communica- |
| • | | tions (01-670 5400) |
| | Jan 28 | Dum and Designments Moon Effective Collection |
| | Juli 28 | Dun and Bradstreet: More Effective Collection Techniques for Credit Controllers and Super- |
| | | vients (01-247 4377) |
| | Jan 28 | visors (01-247 4377) Marketing Society: Media—The Inside Track |
| ٠ | | (01-543 5191) |
| | Feb 1-2 | (01-543 5191) Metal Bulletin Congresses: Middle East Metals |
| | | and Minerals (01-633 0525) |
| | Feb 2 | Ovez: Company Finance for the Executive Secre- |
| | 1 | tary (01-242 2481) |
| | Feb 3-4 | FT Conference: The Seventin Pensions Conference |
| | | (01-621 1355) |
| | Feb 4 | IPS: Energy (0990 23711) |
| | Feh 8 | American Tax Institute in Europe: Finance/Lessing |
| | Feb 9-12 | under new U.S. tax lews (Paris 256 33 70) INFO '82—The challenge of Information Tech- |
| | Len 2-17 | nology (057282 2711) |
| | Feb 9-10 | FT Conference: The Euromarkets in 1982 |
| | | (01.621.1355) |
| | Feb 9-12 | Offsbore South East Asia Conference (01-546 5144) |
| | | |

Centre Point, WC1 Churchill Hotel, W1 Inter-Continental Hotel, W1

Venue NEC, Birmingham

Winter Gardens, Eastbourne

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Wembley Conference Centre

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Barbican Exhibition Centre Exhibition Centre, Bristol

Wembley Conference Centre

Olympia

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Selsdon Park International Hotel, SW5

Bowater Conference Centre

Oafe Royal, WI Piccadelly, W1 Portsman Hotel, W1

Grosvenor House, W1 Tower Hotel, E1 . Waldorf Hotel, WC2

Barbican Centre Inter-Continental Hotel, W1 Singapore

Anyone wishing to attend any of the above events is advised to telephone the organisers to ensure that there has been no change in the details published.

Financial Times Conferences

EUROPEAN PULP AND PAPER IN THE 80's Heisinki — 17 and 18 March 1982

the Angeles of Berthampson and Antonio

This conference sponsored with Helsingin Sanomat will review problems and prospects for the industry in the 80's examining in depth three main issues: - Developments in the European Pulp and Paper Industry and the EEC countries preparation

for tariff changes after 1984 - The integration of Scandinavian mills and the role of North America as suppliers to Western

— Profitability and competitiveness in industry in North America and Western Europe
Speakers will include Mr Fernand Braun, Director General for Internal Relations, Commission of the
European Communities; Mr Norbert Lehmann, President, PWA Papierwerke Waldhof-Aschaffenhurg
AG: and Mr John Wurlidge, Executive Director, BAT Industries, Deputy Chairman, The Wiggins
Teape Group PLC.

THE EUROMARKETS IN 1982

London — 9 and 10 February 1982 In view of controversies over the new French economic policy the Financial Times is pleased to announce that M. Benoît Jollvet, Advisor, Ministry of Economy and Finance, will be giving a major

All enquiries should be addressed to: The Financial Times Limited Conference Organisation Minster House, Arthur Street London EC4R 9AX

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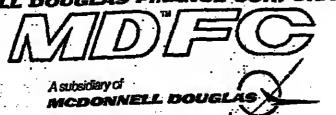
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APPOINTMENTS

Group changes at Miller Buckley

Mr Peter Ayton group finan-chairman: Westinghouse Semi-cial director of MILLER BUCK-conductors, Westcode Systems, LEY has been appointed a main Westinghouse Brakes, Westinghoard director of Buckley Invest- house Signals. Westinghouse ments and also a director of Davenset Rectifiers, Westing-Miller Buckley Developments, house Foundry. Douglas Sales Mr Charles Farrer chief legal officer for the group has been appointed a director of Miller Revenue Controls, Westinghouse Buckley Davidoments W. Garage Revenue Controls, Westinghouse Buckley Davidoments W. Garage Revenue Controls, Westinghouse Buckley Developments. Mr Gerry Brake and Signal Co. (Australia) Robbins bas been appointed and Powertech Inc. Mr Willford general manager and a director has also joined the board of Westinghouse Cubic of Miller Buckley's wholly owned subsidiary Dividag Systems. Mr Tony Pascoe group personnel manager, has been appointed a director of Miller Buckley Group The following have been aphouse Brake and Signal Company with effect from November 10, 1981: Mr J. R. C. Boulding, man-

The Board of MATERIALS aging director of Westinghouse AND METHODS announces that Brakes, Mr R. Ward, managing Mr C. M. Dunks, who has been director of Westcode Systems technical director since 1974, bas and Mr D. J. Norton, managing now been appointed managing director of Westinghouse Signals. now been appointed managing

Provincial Insurance announces the appointment, from March 1 1982, of Mr Kenneth J. Walker, MA, ACII, as deputy managing

As part of its 1982 expansion programme CENTURYAN SECURITY announces a nationwide restructuring programme to assist senior management, and bas appointed Mr J. Dick and Mr Alan Begg (previously general managers for sonthern Scotland and London respectively) as regional directors.

Mr John Sackfield Wallwork has been appointed a director of the DAILY MAIL and GENERAL PRINTERS IN THE TENTION OF THE PRINTERS IN THE PRI

Mr J. M. Souness, FFA, a director and general manager of the LIFE ASSOCIATION OF SCOT-LAND, was elected chairman of ment Scheme at Warwick the Associated Scottish Life University. In April, 30 Offices at their stated annual graduates from its manufactur-meeting in Edinburgh on Januing staff will be sent on the ary 15. He succeeds Mr J. M. course. Macharg who steps down after completing the customary two year term in the chair. Mr W. M. Morrison, MA, FFA, a director full-time staff to the university's and general manager of the Scot-denartment of engineering are tish Life Assurance Company. was elected deputy chairman of the association.

Mr Trevor Barton has been elected chairman of the financial to become acquainted with the sector specialist group of the IN- most modern manufacturing STITUTE OF MANAGEMENT

Mr Mike Webster has been appointed marketing director at ANSWERING, said to be prob- management to personnel ahly the longest established live management. Tutors from the 24-hour telephone response network for the professions and a blend of academic stimulation industry in the UK.

and practical experience. Of

Following his appointment as scheme's ability to "convert" chairman of WESTINGHOUSE PANY, a Hawker Siddeley company. Mr R. A. Willford has
joined the following boards as of high quality recruits.

PARLIAMENTARY DIARY (Amendment) Bill

Mr C. Ryalls, managing director of Westinghouse Services has also

MOTORS, maker of permanent

magnet DC aervomotors in the UK. He takes over from Mr Alan

International appointments,

see page 16.

Rolls-Royce to

graduate scheme

ROLLS-ROYCE is to join the Integrated Graduate Develop-

BL Cars and Lucas Industries

who, since April, 1981, have

sent 60 graduates from their

department of engineering, are

to send a further 60 to join the Development Scheme.

enable production professionals

methods and concepts.

Rolls-Royce sees the scheme initially as an opportunity to

Sixteen-week modular courses

cover 26 specialist subjects, from production processes and

computer-aided design and

university and industry provide

particular importance is the

science graduates to the specific

December 1, 1981.

TODAY Commons: Local Government Finance (No. 2) Bill. Lords: Social Security (Conributions) Bill, second reading: Civil Aviation (Amendment) Bill, second reading. TOMORROW

at and Bill, (Enterprise) reading. Lords: Mental (Amendment) Billcommittee.

WEDNESDAY

Commons: Criminal Justice Bill, second reading: Opposition prayer on the Transfer of Functions (Minister for the Civil Service and Treasury)

Lords: Debate on the Pearson

(HL). committee. THURSDAY

Commons: Debate on subject to be chosen by Opposition. Lords: First report of the Select Committee on Procedure; Harbours (Scotland) Bill (HL), committee: Fire Service College Board (Albolitinn) Bill (HL), committee: Reserve Forces Bill (HL), second reading; Civil Jurisdiction and Judgments Bib (HL), committee: Unfair Dismissal (Increase in Com-pensation Limit) Order 1981; Employment Protectioo (Varlations of Limits) Order 1981.

FRIDAY Commons: Private Members' Bills: Supply of Gnods and Services Bill, second reading: Royal Commission on Civil Trade Descriptions [Amend-Lightlity: Sex Discrimination ment) Bill, second reading.

DACE LENDING DATES

| C. E. Coates | BASE LEN | DING RATES |
|--|-----------------------------|-------------------------------------|
| American Express Bk. 144% Hambros Bank 144% Henry Anshacher 144% Hambros Bank 144% Heritable & Gen. Trust 144% Arbuthnot Latham 144% Heritable & Gen. Trust 144% Associates Cap. Corp. 15 % Hull Samuel 5144% Banco de Bilbao 144% Bank Hapoalim BM 144% Bank Leuml (UK) plc 144% Bank Afreel Sec. Ltd. 16 % Bank of Cyprus — 144% Bank of N.S.W. 144% Bank of N.S.W. 144% Bank of N.S.W. 144% Banque Belge Ltd. 144% Banque Belge Ltd. 144% Banque Belge Ltd. 144% Banque Breat Andrew Co. 144% Banque Belge Ltd. 144% Banque Montagu 144% Banque Belge Ltd. 144% Morgan Grenfell 144% Samuel Montagu 144% Bancolar Rhone et de 1a Tamise S.A. 15 % Bremar Holdings Ltd. 154% Bremar Holdings Ltd. 154% Bristol & West Invest. 16 % Brit. Bank of Mid. East 144% Brown Shipley 15 % Cavendish G'ty T'st Ltd. 154% Cavendish G'ty T'st Ltd. 155% Choniarions 15 % Choniarions 15 % Choniarions 16 % Charterhouse Japbet. 15 % Choniarions 16 % Choniarions 17 % Morgan Grenfell 144% Whiteaway Laidlaw 15 % Williams 26 Glyn's 14 | A.B.N. Bank 141% | Robert Fraser 15 % |
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| First Nat. Secs. Ltd 17 % ¶ Mortgage base rate. | Binet Not Fin Corn 17 0 | 5 Osmend deposits 1272%. |
| LT2[1487 Secs. Purr 11 30 a worldade page 1999. | FIRST NAT. FILL COLP 17 70 | 21-day deposits over £1,000 132%. |
| | TUSE NAT. Secs. Lin 17 % | a mortgage base rate. |
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FINANCE FOR INDUSTRYTERM DEPOSITS.

Interest paid gross, half-yearly. Rates for deposits received not later than 5 · 6 7 8 9 10 Terms (years) 134 134 134 134 134 14 14 144

Life and pensions sales break annual records

INSURANCE

LAST YEAR was another record-breaking one for the life assurance industry, according to provisional figures for new life and pensions business.

The figures were issued on Thursday by the three life company associations — the Life Offices Association, the Asso-ciated Scottish Life Offices and the Industrial Life Offices Association.

New annual premiums last year just failed to reach £2bn, rising 17 per cent to £1.99bn from £1.7bn, an increase which comfortably exceeds the 12 per cent rise in the Retail Price

Single premium business did

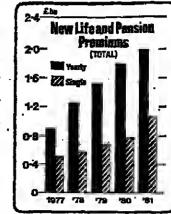
been appointed with effect from even better, exceeding £1bu for the first time and reaching £1.07bn - 67 per cent higher Mr Nick Turnbull has just been appointed managing direc-tor of SMALL ELECTRIC than the £639m of 1980. The industry appears to be

thriving despite the recession. but the figures for new business issued by individual life companies show a varied picture. The bright spots in last year's

business were headed by the continued growth of unit-linked life assurance and pensions business. A clear picture of the growth in 1981 will be available when the Life Offices Association publishes the fourthquarter new business figures for ordinary life and personal pension business due in a few weeks' time.

But at the end of September. the totals for linked annual premiums at £173m and single premiums at £444m had both passed the sales for the whole of 1980 of £189m for annual premiums and £321m for single premiums. The linked life assurance companies participated fully in last year's savings

Abbey Life, one of the two largest linked life companies in the UK reported an 86 per cent



crease in premiums to £55.4m. Hambro few days.

The second hright spot has heen the buoyancy of the self-employed pensions market. The further tax concessions in the 1980 Finance Act meant that the self-employed invest more of their earnings in a pension contract and could invest unused reliefs of previous years. The introduction of a loanback facility proved a superb marketing aid to overcome a reluctance by some selfemployed to lock away assets in a pension contract.

The overall growth will be known when the Life Offices Association publishes the fourth quarter figures. But by end-September self - employed annual premiums at £98m were nearly 50 per cent higher than for the first nine months of 1980, and single premiums at £144m more than double. Both conventional linked and schemes bave participated io this boom

Savings through conventional with-profit contracts have shown a mixed picture in 1981. Many jump in linked single premiums banks have linked up with life commit them to future pay-in £55.6m and a 36 per cent in- companies in their drive to ments.

enter the house mortgage market, with the bank providing the finance and vetting the loan applications and the company using its marketing outlets and providing low cost with profit endowments for the

repayment of the mortgage. Although the association doe not publish overall figures for this sector of the market life companies which have tied in with one or more banks bave reported substantially higher color dentity the delivered. sales despite the dull house purchase market in 1981. Sales of with profit endow

ments in the form of straight regular savings plans remained static in 1981 and were one of the dull spots of the year. This was particularly noticeable with Life, the other major linked life industrial life companies, company, is due to report in a Industrial life husiness, where agents collect the premiums at the homes of policyholders. showed nn growth with annual premiums of £211m.

The other dull market in 1981 has been company pension business—a sector hit by the recession in two ways. The growing number of redundancies bas meant a cut back in membership of pension schemes and hence in premium income.

The lower growth in earnings of employees in the private sector has also meant a corresponding lower growth in pension increments, and thus lower increases in premiums. But it is a very mixed picture with some life companies severely hit and others with quite good results considering the economic situation.

The pattern of changed significantly in 1981. Because of the uncertain outlook employers are unwilling to commit themselves to future payments. They are making single premiums payments to meet current liabilities rather than annual premiums, which

WEEK'S FINANCIAL DIARY

Interiors: Alisa inv Tst. Alise Resident G.T. Japan inv Poerless

Peerless
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Siroud Riley Drummond
Western Board Mills
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Birmingham Mint Jp
Copenhegen Handejsbank AIS Bpc Cap,
Notes 1982 4pc
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Jenis and Cattell 0.5p
Lees (John S.) 0.7p
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Group Investors
MFI Furniture
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WEINNESDAY, NANUARY 20
COMPANY METRINGS—
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Nanson Tst., Great Eastern Hotel, EC,
11.30
MEPC. The Hyde Park Hotel, 66 Knights—

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restatear Hoose, The Institute of Charteered Accountants, Moorgate Place, EC. 11.30 to Wire Group, Granton Park Avenue, Edinburgh, 12.00 BOARD MEETINGS— Flaab;

APROPATE ENE.
British Electric Traction
Newmark Routs
DIVIDEND & INTEREST PAYMENTS—
Bremmer 1.15p

594-6/ 5971.11 Petaling Tin Berhad 6.7710 Stockholders Inv. Tst. 2.450 Sweden (Kingdom of) Fig./Fixed Bds. 1991 S210.83 Toothill (R.W.) 3p Valor 0.8490 9pc Fitg. Rate Ser. Notes 1991

BOARO MEETINGS— Finals: Sterling Trust Uid. States and General Trust Interims:

Havnes Publishing FRIDAY, JANUARY 22

DIVIDENO & INTEREST PAYMENTS—
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Anglo American Coro. ol South Africa 18.204410 BPA Inds. 4.50 Burnett and Hallamshire 6.5a Carr's Milling Inds. 3a Cantrol Sccuritles 1.5750 Dawson Int. 20 Exchequer 18 Lapt 1987 6/apc, 12pc 1999-2002 Sec scheduct 13 upc 1987 & sc. 1 2002 56c Irst Unice Gen. Inv. Tst. 8.5cts szlewood Foods 3.3o unstett (filds.) 7.5o ennons Grp. 0.85o ister 0.10 Midland Inds. 2.90 Midland Inds. 2.9p

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3.850

QATURDAY, JANUARY 23

IIVIGEND & INTEREST PAYMENTS—

Bisnop's Gro. 10

Marston Thompson and Eversted 0 7p

Snow, slush, fog and strikes. Is it worth it?

if you value greater cost-effectiveness and efficiency in your business, it most certainly is. The Which Computer? Show is the

one time in the year when you can check out all the new technology under one roof. Over 30,000 business executives will

be visiting more than 200 exhibitors during the next four days. In view of the fun and games you may have getting here, may we offer you the following advice: If you come by car

That's fine. There's free parking and

plenty of it. If you decide to avoid the morning rush hour by arriving early, we'll be pleased to provide you with hot coffee

and tea-with our compliments. If you intend to come by train This could be a tricky one. The tracks are still there, but we can't be sure about the trains on Wednesday and Thursday. So to be safe, put us down in your diary

for Tuesday or Friday. **Opening hours**

The exhibition is open, normally from 10.00 am to 5.00 pm (Friday 4.00 pm).

Exhibition \ Birmingham W 19-22 January

However, exhibitors will try to be as flexible as possible in view of the circumstances. This year's Which Computer? Show

may be tough for commuters, but for computers and word processors it is unrivalled. Whether you come

Britis at Revise of the Batty Month & 3.

Deposits of £1,000-£50,000 accepted for fixed terms of 3-10 years.

Deposits to and further information from The Chief Cashier, Finance for Industry Limited, 91 Waterloo Rd., London SE1 SXP (01-928 7822, Ext. 367). Cheques payable to "Bank of England, a/c FFI" FFI is the holding company for ICFC and FCI.

EDITED BY ALAN CANE

New thrust in no-break power ITT's come-back

BY GEOFFREY CHARLISH

AT THE foot of the Harz mountains some 70 miles down the autobahn from Hannover the 1,500 strong £30m turnover Anton Piller organisation plans to take an increased share of the world market for specialised power units by deploying a new development development in rota machines called Unihlock. rotary

Already strong in areas such as 400 Hz rotary power supplies for big computers (it claims to have 60 per cent of the U.S. market) and in large scale ventilation/gas moving equipment, the company is now poised to make a hig impact with a design of uninterruptible power supply (UPS) based on combined synchronous motor and generator stator windings and a common rotor.

Compact

Piller claims that the technique, no mora expensive overall than the doal machina motor/generator set or statie solid state systems, neverthe less offers significantly increased conversion efficiency, improved reliability and noticeable reduction in noise

The new system is also typlcally two-thirds the weight of a dual machine and correspondingly mare compact.

The UPS is of crucial importance in many mainframe computers, communications and life supporting medical systems where loss of mains power, even for short periods, can be extremely expensive in terms of loss of computer data, failure of critical communications links, or even loss of life.

Cable and Wireless in Hong Kong uses Piller equipment to ensure continuity of a computer based switching system and in the UK one of the new "Uniblock" systems has been ordered by British Telecom for the Goonhilly satellite terminal.

There is also a need for these "no-break" systems to produce as clean an output s possible—ideally a mains frequency pure sine wave containing no potentially harmful multiples of the mains frequency (harmonics) and no high voltage "spikes." Ideally then, what is needed is a hlack box placed between the three-phase mains supply and the system to be powered which ensures that, whatever the supply input condition, the black box

will always supply clean, 50Hz power. continuous Furthermore, such a system, ideally, will never hreak

An early approach, still quite widely employed, uses a DC motor with its shaft compled to an AG generator. The motor is normally fed by DC power obtained by rectifying the input mains.

When the mains fall completely, a hattery is automatically switched in to replace the absent rectifier ontput. In either event, tha AG generator continues to supply the 50 Hz output which is clean since anly a mechanical shaft connects motor and generator.

Use of a flywheel on the shaft allows short mains "drop-outs" to be eccom-modated from the stored flywheel energy.

Many of these equipments

are in use, but they are noisy and hulky and not too efficient (about 86 per cent). But they are reliable, says Piller, and popular in emergent countries since they have no complex electronics to service.

The other mejor technique of which Piller is not a strong proponent, although it has a small defence husiness—is the all-solid-state static inverter.

As before, DG is derived either from rectified mains or a battery and the inverter reconstitutes the AG with some harmonics that are reduced by suitable filters.

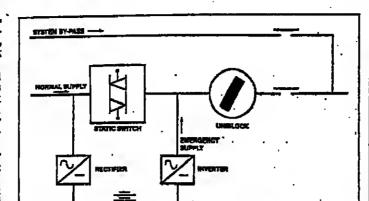
Reliability

Such systems are compact, lightweight and less noisy than motor generotor systems. But, claims Piller, the component count in the electronics is often so high that good relative reliability is not ohtainable.

Indeed, according to Klaus Sachs, Piller's technical director, this will probably always he the case in spite of improvements in component reliability: there are just too many of them. In addition, he points out, that snitably qualified engineers are needed to ser-

vice such systems. For these reasons, Piller has moved towards hybrid ayatems, the latest of which is the Uniblock, a kind of combined motor and generator in one machine.

The Uniblock . consists, essentially, of a stator in which alternate alots are wound with input and ontput



windings. With the input winding fed from the three phase mains, the customary rotating magnetic field is created, causing excited rotor to excited rotor to spin in synchronism with the field.

Windings

What amounts to a trans-former effect occurs between the input and output windings on the stator. Furthermore, by feeding the rotor with DC derived from the machine output via rectifiers, the power transferred from the input to ontput stator windings can be controlled and stabilised. Quite large mains input

changes are not passed to the stator output windings. In practice, even mains drop-onts lasting up to about milliseconds cause no loss of output dne to the "ride-through" flywheel effect of the rotor which is larger and has more inertia than it would otherwise hove for its power rating, due to the need to accommodate two winding

High voltage spikes and mains frequency variations are similarly reduced. For complete no-break protection, an antomatic solld state switch (see diagram) activates a hattery/inverter system, converting hattery DC to 50 Hz AC. In the new Piller system about 5 per cent of the total power la diverted through this poth during normal operation. providing a proving circuit

The design of the inverter is simple and reliable, says Piller—it uses The Unihlock design also

and charging the hatteries.

reduces the transmission of harmonics through the system giving a purer sine-wave output. These harmonics coming in on the mains input produce their own, faster rotating fields, but they are removed by special damping windings that have no effect

If the Uniblock is seen as replacing a DG motor, a fly-wheel and an alternator (tetal of six bearings) with one machine having only two bearings, then it can be seen why the efficiency rises to about 92 per cent, says Piller. Unihlock has taken about

four years to develop and prototypes have been exten-sively tested for about two years. While the company admits that this is not long enough for in-depth reliability studies, it estimates thet the mean time between failures should be of the order of 15 years.

This, it claims, compares

with about nine years for motor / flywheel / generator arrangements and two years for all solid state systems. Piller executives are convinced that there is already a move away from solid state systems: presumably with Uniblock they intend to punch the message home.

Flame retardant

TECHNOLOGISTS of British Vita haa developed a new foam material, which, they say, has unparalleled qualities of flame retardancy. It is also, they say, resilient, comfortable and dur-

Called Vitafoam VFR, the material will not support combustion and will protect inflammable materials around which

in computers

AFTER A period in which it For £2,500 the user gets the made an Apple-like micro- central processor unit hased on computer called 2020, ITT bas the eight bit Z80A, 64k bytes of now come out with its own memory, two five-inch floppy design of system based on the disc drives housed in the pro-

"But." says Mr F. H. Hanna, ITT Consumer Products managing director, "It did provide us with hard, expensive and package. difficult experience that pre- The vic pared ua for the move to this

Although IIT has joined a crowded market, Mr Hanna believes the 3030 will score over the others because, he claims, it has many of the attributes of a minicomputer with the exception of the price.

For ITT the computer might be said to have turned full circle. Those who are old enough will remember the Stantec Zebra of the early '60s, an admirable machine in its time, designed by Stondord Tele-phones and Cahles, ITT's main UK subsidiary. But edicts from the very top

of the corporation effectively stopped all computer development in the mid-'60s, on the premise that ITT was in telecommunications, not computing. In the last 10 years, bowever, it became obvious that telephone exchanges were fast turning into specialised com-

puters; expertise had to be Thus, the corporation seems onca again ready to offer commercial computing products — the new 3030 has been designed by STL Harlow in the UK and. is heing huilt by ITT subsidiary,

Germany. UK micro-software house MPSL has written business application packages to perform on the BOS operating systemwhich bes been proven in multi-user systems. But the machine can supplies to large companies. also operate under GP/M. DEG's now widely accepted standard through the same routes.

Standard Electric Lorenz in

Isolation transformer range

been announced by Claud Lyons, (09924 67161). These are finish to blend with office decor. designed to protect computers A brochure is available from the or other equipment from voltage company.

eight bit Zilog Z80A or the 16 hit Intel 8086. It is designated ITT 3030.

The 2020 bas heen dropped.

The 2020 bas heen dropped.

The 2020 bas heen dropped.

The 2020 bas heen dropped. operating system together with the Autowriter WP package and Autoindex database The video monitor, essential to operating the machine, costs

Upgraded

Various printers can be con-nected via an RS 232 port and there is a standard output to a

The system can he expanded easily. By taking out one printed circuit board and inserting another, the processor can be upgraded from eight bit to 16.

Similiarly, the internal memory can be enlarged from the basic 64k hytes to 256k bytes. The floppy discs can be enhanced to 1120k hytes and, via. an additional interface card hard disc to 10 megabytes can he deployed.

Other buses-S-100 and the IEEE 488 can be supplied, as can an adaptor to allow an ordinary TV set to be used

instead of a monitor.

By adding a further card, the 3030 hecomes a multiuser computer fully supported by the operating system. Up to four users' can access files or nudertake processing simultaneously.

Lead house for the project in the UK is ITT Consumer Products (UK) of Chester Hall Basildon (0268 3040), which will he distributing the product through microcom-puter dealers and aoftware

The Business Systems Group minicomputer of Brighton will look after bulk

STABILAG, a range of TRX transients, spikes or other ultra isolation transformers has supply line disturbances. The series is available as free Hertfordshire standing units with two tone-

Foundry resins range

ALPHASET TPA-2, an addition to its range of alkaline phenolic resins has been introduced by Borden (UK), North Baddesley, Southampton (0703 732131).

Borden says that the TPA-2 range has reduced viscosity making it easier to mix and ensuring good distribution over the sand grains. The grade can be used to bond akaline

and poor quality sands as well as high silica content foundry

sands High strength moulds and cores can be made in cure times from three to 45 minutes.

Advertising Technology

Langford-Alexander Advertising

6,George Rd.,Edgbaston Birmingham, 815 1NP 021 455 9696

Temperature controller

A temperature controller, the MC30/IID with liquid crystal display, metal case, plug-in con-struction and freedom from Ri interference, has been intro-duced by West Instrument International Division of Gulton Industries. Technical details from 0278 606271



Air-powered coil nailer for pallet makers

AN ADDITION to its range of soft -woods of round head, air-powered coil nailers has plain, galvanised and ring-heen announced by British shank nalls up to 75 mm. It is claimed to be ideal for Industrial Fastenings. Designated the BIF-fast 750, the tool Full technical details from BIF Is claimed to provide hetter at Ayleshury, Bucks (0296) repetitive fixing into hard and 81341).

Engineering contractors to the

BUILDING AND CIVIL ENGINEERING

Laing has £40m

A BATCH of new contracts for Estates SA "Arab Village" John Laing Group covers pro-jects for Spanish arm Laing larly priced is the construction SA, and the company's Scottish region, all together worth over

More than £30m worth in

Spain includes a £9.2m 1.6 kilometre long road tunnel with 10 kilometres of access roads and two main junctions in the Pyranees, in association with OSSA and Padros, for Tunel del Cadi, Concesionario del Estado SA. Another £7.5m project is for 312 apartments near Marbella

for Patrillo SA. At Teruel-about 200 kilometres eaat of Modrid-a new 31,800 square metre hospital is to be built for the National Welfare Institute under a £4m contract, and a further £2.3m hospital award for the same client at Denia, Alicante. Contracts totalling £2.3m are for extra works to two existing

An 850-metre rallway tunnel at Castellbisbal near-Barcelona is to be excavated and hridges constructed, under a £2.7m unloading facilities and three award by RENFE, the Spanish upper car parking levels with

CONSTRUCTION of the Beliche plete.

Dam located in the Algarve region of Portugal has gone to

Awarded by the hydraulics

and Publie Works, the contract

scheme is valued at £1.1m for completion of 60 flats for the

of a sewage treatment plant at El Escorial, Madrid, for the Confederacion Hidrografica del

Finally in Spain, work Is under way on four small schemes including a store at Castile pier in the port of Tarragona; drainage and emhankment work for RENFE in Algeciras: a 1,631-metre drain for Madrid City Corporation: and a pier for unloading fish at the port of Aguilas in Murcia.

Laing's Scottish contracts are worth over £10m and include the £4.8m Merchiston Hospital project of Brookfield. This is an extensive development covering four demched 30-bed blocks together with a central amenity complex, mortuary block and a boiler house. A new superstore complex in

Hamilton for Fine Fare is worth another £4.9m to Laing Laing contracts at Gran Hospital, Madrid, and Alicante hoswho will construct the entire complex. This will incorporate a large superstore, mails and 14 integrol shopping units. There will be hasement storage. state railway company.

Also near Marbella, 48 houses also cover installing services will be built at the Grande and fitting out.

Another associate company,

Costa Lima LDA, has two jobs

ment and resurfacing of a 20-

tween Lagoas and Entre-os-Rios

McAlpine dam in Portugal

an easociated company of Sir from the same client. One is Alfred McAlpine and Son, valued at 100bn escudos Construções A. Supico SARI. (£840,000) and is for improve-

services division of the Portu-guese Ministry of Habitation nacional number EN 106 be-

is worth 342bn escudos (£2.8m) in the north of Portugal. The

and involves constructing a second project, worth 94bn clay cored earth dam of ohont escudos (£785.000), is for re-

1bn cubic metres, a diversion surfacing a 14-kilometre section

tunnel, low-level discharge, over- of the estrada nacional No.

flow spillway and access roads. EN 264 between Sao Marcos da

The project will take around Serra and Sao Batolomeu de

three and a half years to com- Messines in the Algarve.

Brignell housing schemes

CAMBRIDGE BUILDER John flats. South Cambs District Brignell has received £3.3m Council has placed a £612,000

worth of new work covering award to huild a warden-five different contracts. Largest controlled old people's sheltered

Granta Housing Association in is for a rebabilitation scheme

Shelly Row at the top of the at Bury St Edmunds, and the city's Castle Hill.

At Cambridge's Ditton Lane covers 15 factory starter units Estate, a £1m scheme is for the at the city's Nuffield Road

completion of 62 new houses and industrial estate.

housing scheme.

Fourth project, worth £313,000.

Major sulphur plant WIDELY USED for making and G and the Alireza Group-

agricultural fertilisers, sulphur has got the construction award. is considered very important in Liquid sulphur will come Saudi Arahia where a major handling, processing and fscilities project is under way in it is produced as a by-product of

ment of equipment and bimed production pumped jects is due to start at once materials for the sebeme, and through a 25 kilometre pipeline completion scheduled AMEC—jointly owned by ME to Jubail. This heated pipeline February 1984.

from three locations-Shedgum, Uthmaniyah and Berri-where the eastern province. gas processing plants. Deliveries wimpey ME and G has heen from Shedgum and Uthmaniyah awarded the lump contract for will he transported hy heated the engineering and procure- tanker to Berri, and the com-

is said to be one of the longest

Produced and exported as "prills" (its most marketable form) the product will be stored in 80 metre long pipes and taken by moving belts to o shiploader capable of loading at a rate of 2,000 tonnes an hour.

Work on these turnkey projects is due to start at once with

A board for all seasons

THE DEVELOPMENT of wood-bosed construction materials with cement bonding began half

rooms and in critical zones of possible condensation.

Established users in the UK always been to combine the specified Duripanel for the benefits of the two materials bottom skirts on prefabricated and reduce their individual huildings and Gilway (os skirt-

attempts to produce a good quality particle-board over the lest few decades but, of ell the factos at unfortunately, most of these and are finished resulted in a rather inferior reinforced plastic.

Potentials

The Swiss soldiered nn with research and development of a dense board with good mechanical performance, because they recognised the potential in the construction industry for a durable, strong and fairly cheap sheet material. The result was Durisol AG's wood-cement particle board, Duripanel, widely used for some years throughout Europe and now about to he produced in the UK.

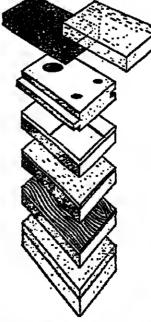
Smooth, fine grained with a cement enriched aurface, the board is non-combustible, resistant to water, humidity, fungi and termites. It is offered, not necessarily

as a competitor or a replacement for chipboard, but as a versatile building material with a wide number of applications. Particularly suitable for external cladding, due to its good weathering properties (the sawn edge may be left unprotected), it is suggested also as an interior wall lining, especially in public hulldings, because of its fireproof

qualities. As plate-shaped construction elements, however, these panels will serve mainly for the division of rooms and the covering of surfaces. The maker claims that the board bas outstanding resistance to weathering and humidity which makes it ideal for use outside, as well as near or in the ground, in wet

a century ago and the aim has include Portakabin, which has ing boards which repel termites There have been numerous on buildings destined for the Middle East). At tha new Billingsgate Market the heses of ell the facios are Duripanel at a and are finished with glass at

Movawall has used the material for sliding partitions for sound proofing, and at Pilkington Glass's St Helen's factory the panels have heen installed for ceiling linings.



The board starts with a combination of the cement and wood infused with non porous chemical agents, will take coats of paint and veneers. hnt plasters and finishes like durable, fire resistant, cement product ond, finally, can be coated with a special anti-graffiti finish.

Parents of teenagers, nr those neighbouring on noisy discotheques, will be pleased to know that "sound boxes" are in the pipeline. Apart fram combating fire hazard and anti-graffiti horrors (some panels are treated with a special surface) the panel's excellent sound-proofing characteristics have proved a boon in discos. at a commercial radio station Clacton-on-Sea reflective ceilings) and at Radio the 210, Reading, where broad-

walls, floors, ceilings and doors

A sound-proof door made in alternative materials (psually a sandwich combination of, for example, lead/asbestos/steel) could cost between £500-£700— Duripanel says it can give the equivalent at a third of that

casting studios have Duripanel

Now the panels are to be made in the UK where the British licensee is taking a site, either In Wales or Scotland, This manufocturing unit will employ about 45 people and will be geared to produce 100 cubic metres a day.

Gone will be the expense and

delay in trensportation of the panels from Europe which will be distributed in this country hy Mallinson-Denny (Lydney) of Gloucestershire. Duripanel will be readily

available in thicknesses 6-40 mm (maximum density panels offered as actual load hearing walls in certain construction projects) in sheet sizes 2,600 x 1.250 mm and 3,100 x-1.250 mm. Easily cut without any special tools, the panels can be painted, stained, venecred covered with GRP. In destratifiers. agricultural applications - as

chicken runs, cow bytes, pig styes — they can be left in their natural finish. More from Duripanel UK. The Manor Yard, Great Shefford, Newbury, Berks (0488 39 612). DEBORAH PICKERING

tect and the space available

What's new in building

on alte.

INTENDED TO minimise the danger, damage and expense of fires occurring in chemical plants, oll refineries and power stations is Darshield fire-protection system deve-loped by Darchem Engineering of Stockton-on-Tees, Cleve-

land, UK (0740 30461). This comprises lightweight, ready-to-fit insulation enclosures made to meet clients. specifications and engineed to suit the equipment they pro-



The Darshield system undergoing a fire test (left), and the system litted around the actuator it is protecting.

SLOTTSEAL FORMBAND is a new scalant said to be easy and clean to use, resilient and compatible with all substrates and able to cope without degradation with large amounte. of movements over a very wide temperature range.

Available in various grades of ceilular foam compression strlps impregnated with hlends of resins and refined hitumens in expanded form for compression applications and precompresed forms for insertion into an existing gap. It may be self-adhesive if needed, and seal capabilities exceeding two metres water

on 044 282 5303,

AIR destratifiers (used for recirculating zir) are generally noisy, cumbersome and hideous to behold-particularly in industrial applications-believes a newly formed British company, Eteq. which has just launched 'Alchlend' - range - of

Developed and tested overe the fast year at Cranfield, the result is a product which claims to be almost silent, sturdy, and not an eyesore. Apart from tooking good, it is highly efficient (promising beat savings of 10 to 15 per

No special tools are needed to instal the panels

which are removable for ron-

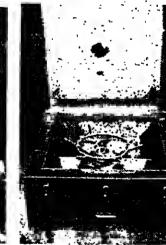
tine inspection of the pro-tected equipment.

stainless steel construction enables the assemblles to stand up to the effects of

weather and environment as

well as repeated exposure to

The company says that tha



cent) and should pay for itself within two years of installa-It is offered as a machine to improve living and working environments—and reduce condensation — in offices,

> greenhouses as well as com-mercial huildings. More from Eteq at Unit L. Edison Conriyard, Brunel Road, Corby (053 66 68041).

hotels, hospitals, schools,

gauge are attainable. More

oil, gas, chemical, mores and powergeneration industries.

Sri Lanka bank job for Sunley

THE DESIGN and build package for Grindlays Bank in Colombo, Sri Lanka has been won hy Bernard Sunley on a £4m-turnkey contract
This involves huilding a new storey premises to replace:

Grindlays original office destroyed by fire in 1980. The new huilding will he of reinforced concrete construction with air conditioning, two lifts and an escalator serving the main hanking hall.

Kirk work CHARLES HILL subsidiary, Kirk, has new work worth over

£24m. .A new warehouse for Silentnight at Nelson, Lancashire is valued at £764,000; seven industrial units at Bedminster, Bristol, hring in £600,000; and Broken Scar water treatment works at Darlington (£367,000) are awarded by Northumbrian.

Water Anthority.

An advance factory at Ingleton in Yorkshire, for EIEC is worth £164,000, and other jobs.

Cover £121,000 worth at the North West Water Authority drainage and pump house at Southport, roads and drainage in Clitheroe (£115,000) and a factory for Rosendale at Bacup-

Leech joint venture

A £1.1M joint venture housing project will be carried out by Leech Homes (North West); with Manchester City Council for the provision of more than 60 new homes on a cleared site ! at Old Elm Street, Choriton-on Medlock.

The new units will be mixture of one, two and three bedroom homes at prices from about £15,000 to just under £21,000. They will he offered to seven different categories of potential owner-occupions before being put on sale to the general

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9.08 am. For Schools, Colleges, 10.00 Few and Me. 10.15 or Schools Colleges, 12.30 pm News After Noon (except London), 1.00 Febble Mill At One 145 Camberwick Green, 201 For-Schools, Colleges, 3.00 Seg Hear, 3.25 Delia Smith; The Course, 3.53 Regional News for Eogland (except London). 3.55 Play School, 420 Secret Squirrel. 425 Jackanory. 448 Playboose. 5.05 John Crayen's Newsround. 5.10 Blue Peter.

5.40 News. 6.00 Nationwide (London and and South East only).

6.25 Nationwide including the restoration of Exeter Cathedral. Another is John Hurt who, Watchdog 55 Doctor Who. 7.20 The Rockford Files starring James Garner.

8.16 Panorama. 8.25 Last of the Summer Wine starring Bill Owen, Peter Sallis and Brian Wilde. 3.55 Pobice: A look inside Thames Valley Constabu-lary (3) A Complaint of

10.35 Film B2 Special. 11.10 Big Jim and the Figaro Chib, Barning, Norman Bossington and Roland 11:38 News Headlines.

11.40 Speak for Yourself. All IBA Regions as London except at the following times:

ANGLIA: 1.20 pm Anglia News. 12.25 Manday
Film: Assistant Mr Perrin, and Mr
Trailt. statung David Farrar and
Marine Schring: 5.15 University Challenge. 6.00 About Anglia, 6.30 Survives: 10.30 Anglia Reports: 11.00 The
Peliscal Presents: 12.00 A New Xind
of English: 12.30 am: Reflection.

BORDER The Gemes, 3.45 Maney-Ga-Round, 5.15 Sygones, 6.00 Locksround Monday, 5.15 The Sound of The Reybods Family, 5.30 Mr and Mrs. 10.30 Things, 31.40 Border News, Summary.

1,20 pm Central News 2.00 The Nation Marsh Mystery: Virasge Murdan, 3.45 Money-Go-Round, 6.00 Central News, 10.30 Laft, Right and Central News, 11.76 Central News, 11.76 Paris by Night, 11.45 Something Officiant.

(S) Stare-ophonic broadcast

RADIO 1

5.00 am As Redio 2 7.00 M/ks
Read: 3.00 Simon Betes: 11.30 CavaLee Traves. 2.00 pm: Paul Sernatt.
3.30 Stave Wright: 5.00 Pates Powell.
7.00 Stayin Alive with Andy Peables.
8.00 Oevid Jersen. 10.00-12.00 John
Paul (S).

RADIO 2

6.00 am News. 6.02 Cricket Oaak.
5.03 Stave Jones (5). 7,30 Terry.
Wogen (\$). 10.00 Jimmy Young (\$).
12.02 pm Cricket Deak. 12.03 Gloria
Hummford with the best of Redno 2
music and conversation (\$). 2,00 Ed
Stewart (\$). 4.00 Deavid Hemitten (\$).
5.45 News: Sport. 6.00 John Dunn.
a.02 Soccar Speciel. 8.00 (YHF only).
Folk on 2 (\$). 9.00 Humphray Lyttleton with The Bast of Jazz (\$). 9.55

Nobse. 5.15 Entire Idea From 5.00 Chennel Report 6.30 The Two of De. 2.00 Quincy, 10.22 Chennel Late News, 10.35 Ladies Men. 11.05 Golfing Greats (Lee Travine), 11.05 Samey Miller; 11.55 News and Measter in French.

3.55 Star Movie: "Welcome

10.10 am Managing The Micro.

10.35 Speak for Yourself.

11.35 Write-Away.
2.00 pm A Child's Place.
2.25 Maths Help.

2.40 Other People's Lives.

3.05 The Computer

Stranger'

11.00 Play School, 11.25 Play It Safe!

GRAMPIAN

9.25 am Frest Thing, 1.20 am North Nove, 2.30 Monday Matines: "The Admirable Crichton, starring Kennath More, Selly Ann Howes, Olene Celento and Cook Parker, 6.00 North Tonight, a.30 Country Focus, 10.30 Feature Film: "The Anderson Tepes," starring; Seen Connery, 12.20 am North Head-

-GRANADA

1.20 pm Grenede Reporte. 2.30 Monday Metines: "Sunarruck," starring Hery Seacomba and Maggie Fitzgibbon. 6.00 Graneda Reports: 6.30 Mr Medin. 9.00 Quincy. 10.30 Best Sellers: "From Nets to Eternity." aterring Natalia Wood. HTV

Sports Oeak, 10.00 Rolf's Walkebout, 10.30 Star Sound with Nick Jackson, 11.00 arran Matthew with Round Midnight, 1.00 am Truckers How (S): 2.00-5.00 You and the Night and the

RADIO 3

6.55 am Warther, 7.00 News. 7.05 Morning Concart (\$) 8.00 News. 8.05 Mprining Concart (\$\frac{cont}{2}\), 8.00 News. 8.05 Mprining Concart (\$\frac{cont}{2}\), 8.00 News. 8.05 Mprining Concart (\$\frac{cont}{2}\), 10.00 Music for Organ (\$), 10.35 Amold Cooks string quarter recital (\$), 11.00 BBC Northam Symphony, Orchastra. (\$), 1.00 pm News. 1.06 BBC Lunchtima Concart (\$), 2.00 Marines Musicial (\$), 3.60 The Songs of Mussprgsky (\$), 2.20 New Records (\$), 4.55 News. 8.00

Paris by Night 11.45 Something 1.29 pm HIV Naws, †2.30 Monday Officiant.

CHARNEL Guinness Glyns Johns, Valeris Hobson and Patula Clark, 5.15 Offician Stockas, 1.20 pm Channet Lunchtime Naws, 2.00 HTV Naws, 10.28 HTV Naws. What's 99 Where and Wasther, 2.30 10.30 Survival: 11.00 Ospeche Mode. 11.30 Sosp.

HTV Cymru/Wales—As HTV Wast except; 12.00-12.10 pm Flainbatem. 4.15-4.20 Mr Msgoo. 4.45-5.15 S4r. 6.00 Y Oydd, 8.30-7.40 Report Wales, 8.30-8.00 Yr Wythnos. 11.00-11.30 World in alton (As HTV West, S.30 pm).

5.40 Undersee Kingdom. 6.00 Maggie.

6.50 News Summary.

7.55 Porridge. 8.25 Grace Kennedy.

9.00 Three of a Kind. 9.30 Horizon.

7.30 The Genuine Article.

Smith's Favourite

6.25 Mr Si Garden

6.55 · Riverside.

10:45 Newspiebt. .

TELEVISION

Chris Dunkley: Tonight's Choice

thing? Is it the satisfection of seeing the philatelic expert fooled.

the art historian's pretensions punctured, or just the appeal of the practical juke? Whatever the secret ingredient John PitzMaurice Mills' programmes always seem to have it. The

Genuine Article on BBC2 tonight deals with assay and hall-

marks. Let There Be Love on ITV is one of the recent spate of

situation comedies about the divorced, the separated or the

which seem to make them worth listening to whatever the

subject. One such is Michael Oliver who presents a special

Kaleidoscope on Radio 4 devoted to the activities surrounding

later on the same channel, starts reading a new Book At Bed-time: Joyce's "A Portrast Of The Artist As A Young Man."

There are a few people with radio volces of a certain quality

widowed, all considering remarriage.

Why do fakes often have a greater fascination than the real

SCOTTISH :

T.20 pm Naws and Road and Westher, 2.00 Monday Matrines: "The Viking Queen." 3.45 Money-Go-Round. 5.15 Emmardate Farm. 6.00 Scotland Today, S.40 Crimedesk, 9.00 Quines 10.30 Encors. 11.15 Strien Moor meets Niki Laude, 12.15 am Late Cef

1.20 pm TSW Nawa Headlines. 4.12 Gue Honeybun's Magic Birahdays. 5.15 Emmerdule Ferm. 5.00 Today South Wast. S.30 Tha Two of Us. 9.00 Quincy. 10.32 TSW Lata News. 10.35 Ladies' Men. 11.05 Golling Greats (Lat Trevino). 11.30 Barney Miler. 11.55 Postscript. 12.00 South West Weather.

1.20 pm TVS News, 2.30 Monday Mannes: "Letters from Frenk." 5.16 Watch Thus Space . . . That Monday Evening Essling, S.30 Coest to Coest. 6.00, Coast to Coest. 6.00, Coast to Coest. 8.30 Quincy, 10.30

Mainly for Placaurs (S). 7.00 Aspects of the Blues. 7.30 Pfitzner and Regar concert from Saarbrucken, part 1 (S). S.20 Coubt Everything at Least Once. 4.40 Concert, part 2 (6). 2.35 Obes and Plano recitel (S). 10.10 The Hygiens of Cycling. 10.30 Jazz maritam (S). 11.00 News. 11.05-11.16 Musqua O'Ameublement (S). Medium Ways as VHF except: S.40-11.00 am Cricket: Fifth Teal, India v Engand of Medicae.

RADIO 4

6.00 em Naws Briefing. 6.10 Ferming. Wask. 6.25 Shipping Forecast. 6.30 Today. 8.35 The Week on 4. 8.45 Miles Kington with the 88C Gound Archives. 5.00 News. 5.05 Start the Week with Richard Boker. 10.00 News.

LONDON

9.30 Schools Programmes, 12.00 Cockleshell Bay. 12.10 pm Rainbow. 12.30 Do It Yourself. 1.00 News, plus FT Index. 1.20 Thames News with Robin Hous-1.30 Farmhouse Kitchen. 2.00 Money-go-Round with Joan Shentoo and Tony Bastable. 2.30 Monday Matinee: "My Father's House." 4.15 Dangermouse, 4.20 Graham's Ark. 4.45 The Book Tower. 5.15 Mr and Mrs.

5.45 News. News 6.00 Thames Andrew Gardner and Rita Carter.

6.25 Help! with Viv Taylor 6.35 Crossroads. 7.00 Wish You Were Here ...?

Judith Chaimers looks at Great Yarmouth's new 151m Leisure Centre: Chris Kelly looks at holidays in Jamaica.

7.30 Coronation Street. 8.00 Let There Be Love, star-ring Paul Eddington, and Nanette Newman. 30 World in Action. 9.00 Hilt Street Blues, 10.36 "Castle Keep" starring

Burt Lancaster and Patrick O'Neal.

12.25 am Close: Sit Up and Listen with Jack Jones.

† Indicates programme in black and white

A Full Life (John Osborne). 11.00 Threles: "A Killer in Every Corner."

TYNE TEES 8.20 am The Good Word. 9.25 North East News. 1.20 pm North East News and Looksround. 2.30 Monday Marriae. and Looksround. 2.30 Monday Marmes. 5.16 Happy Osys. 8.00 North East News. 5.02 Three Little Words. 8.30 Northern Life. 9.00 Quincy. 10.30 North East Naws. 10.32 Arefing. 11.1S Lou Grent. 12.10 sm Trevelling.

ULSTER .
1.20 pm Lunchtims. 2.30 Monday
Malinea: "Botany Bay." starring Alan
Ledd and James Mason. 4.13 Ulster
Nawa. S.15 That Monday Evening Fsai-Naws. S.15 That Monday Evening rea-ing. 5.30 Good Evening Ulster. S.00 Good Evening Ulster (cont). 6.30 Mr and Mrs. 9.00 Quincy. 10.29 Ulster Weather. 10.30 Ulster Lendscapes. 11.00 Face Your Future, 11.25 Bedtims.

YORKSHIRE

1,20 pm Calendar News. 2.30 Mon-ay Matines: "Maks Me An Offsr," day Mahnes: "Maks Me An Offsr," atarring Peter Firsth, Adrienna Corri and Affia Base. S.15 Mr and Mrs. 6.00 Calendar (Emley Moor and Belmont solutions). S.30 Enterprize '82. 2.00 Quincy. 10.30 There's Lis North of Warford, 11.15 Brish Moore, Mests Maki Fauda

10.02 Money Box. 10.30 Oaily Service

10.45 Morning Story. 11.00 News. 11.05

10.45 Morning Story. 11.00 News. 11.05

Oown Your Way visits Oakmouth in South Oavon. 11.50 Postry Please? 12.00 News. 12.02 pm You and Yours. 12.27 Legal, Oacant. Honest and Truthlul (S). 12.55 Wasther, programme news. 1.00 The World at One. 1.40 The Archere. 1.55 Shipping Forecast. 2.00 News. 2.02 Womest's Hour from The Guildhall, Plymouth. 3.00 News: 3.02 Alternoon Theere. 4.35 Report South West. 4.45 Story Time. 5.00 PM: News Magazine. S.50 Shipping Forecast. 5.55 Wasther, programme news. 6.00 News. fincluding Financial Report. 6.30 The News Quiz (S). 7.00 News. 7.05 The Alchers. 7.20 Star. the West with Richard Baket 8.00 The Monday Play (S). 2.15 Kaleido-

Naws. 7.05 The Acciners. 7.00 State
the Week with Richerd Bakel 3.00
The Monday Play (S). 2.15 Kaleidoscope. 8.59 Waather. 10.00 The World
Tonight. 10.30 Science Now. 11.00
A Book at Badrime. 11.15 The Finencial World Tonight. 17.30 Today in
Parliamem. 12.00 Naws.

Expanding the prosecutor's role

AMID MUCH fuss and pother, frequently exercised, and theo-system that we divide the of trial judges is always avail-over the sentence passed by retically it enabled the sentence criminal process into two able. But if the judge errs on Judge Bertrand Richards at 1ps- to be increased or decreased. In distinct parts, the ascertainment, the side of leniency there is wich Crown Court on the man practice, the power to increase of guilt or innocence and the moments of correcting the who pleaded guilty to raping a was never exercised, save in disposal of the guilty. For the young hitch-hiker, there has wholly exceptional circumtrial of the offender, elaborate some commentators to seek a registron by Judge Richards of emerged an issue of more than stances, passing moment. Just as Parlia- varied downwards. ment is embarking on the passage of another Criminal Justice Bill (the fifth in 20 years) the whole question of the role of the prosecution in the sentencing process seems ripe for

debate and reform. The issue has been prompted by the sustained campaign by at least one MP to get Judge Richarda to reconsider bis sentence and impose what is regarded as a more realistic penalty of imprisonment instead of the £2,000 fice imposed. (Only last Friday the Lord Chief Justice restated the courts' policy toward those convicted of rape: other than in exceptional circumwholly stances, they should receive

prison seotences.) Parliament has provided that within a month of sentence, the Crown Court may vary or rescind any sentence that it has passed. But that provision has

tences after a sllp of the tongue or a slip of memory. It does not allow them to revise their sentences upwards. Before the reorganisation of the higher criminal courts, with the abolition of Assizes and Quarter Sessions in 1971, judges were free during the period of the Asaize or a Borough quarter sessions to call an offender hack and deal with him in a different way. At the end of the Assize or aessions the criminal calen-

been interpreted by the appeal

court as giving the judges the

power only to amend their sen-

the sentences passed on them. was signed by the judge. From that moment, the power to alter any seotence vanished. The power was nevertheless But sentences were

Assize judge who often imposed swingeling sentences upon offenders, which he hoped would be widely reported and thus act as a powerful deterrent to contemplating malefactors.

Theo, at the end of the Assize the judge would unnstentati-- even surreptitiously alter the sentences in the calendar, as he signed it. to the correct tariff: the corrections not being publicly declared were not publicised.

(even over-elsborate) procedures are huilt iotn the There is a story that circu- criminal trial that have lated among lawyers of an attracted worldwide admiration for their fairness to the accused; indeed many claim that the English system is almost too fair in the safeguards persecuting the offender? In the it provides against the possibility of a wrongful ennviction; the rules as to the admissibility of cogent evidence are a prime

> But then, as soon as the verdict of gullt is recorded, the

system drops into a lower gear. The prosecution drops out of the process, and a dialogue, more or This approach discloses the less thorough according to the dilemma of all sentencers, proclivities of the judge

towards the question of sentenc-

judge and defending counsel.

ing, takes place between the

Penal sanctions are an essen-

tial aim of the criminal justice

system as reflecting society's

need to deal with its offenders.

and yet at the moment of maxi-

mum concern the prosecution

The defence, in making its

plea in mitigation, can say any-

tion, and the judges react to

this situation by taking on the

role of advocate for and protec-

for of the State. No longer can

the Olympian aloofness of the

judge, adjudicating between

rival contenders, be preserved.

ceases to play any role.

Ipswich case.

obvious that penal administrators have a vital interest in the sentencing process and yet have little ability to affect the level of sentencing by the courts, except by persuasion or ultimately legislation. Judges would be materially assisted if someone was given the right to be heard on behalf of the Home Office, in order to air publicly at the sentencing stage the view of the administrator.

revision by Judge Richards of

his senience of a fine in the

Is there not a case for allow

ing the prosecutor to play at

least some role in the sentencing

process without appearing to be

early days of the Court of

Criminal Appeal, from 1907

until the 1950s, the Crown was

represented in appeals by con-

victed persons, and even was heard to advocate an increase

in the sentence, which the

appellate court had the power

It has become transparently

to do until the mid-1960s.

Against this change is the deep-rooted aversion of the legal profession (and, one suspects, a large section of the public) to the Crown having its say on the proper sentence to be passed. Any proposal for change would meet with the stiffest apposition.

Since the Royal Commission thing without fear of cootradic- on Criminal Procedure was not generally asked to report on the trial process it made no recommendation about sentencing when it proposed major authorities.

But if we are to move towards a more centralised system of prosecuting, the time role in the courts, more nearly the right of appeal and the controlled by a single national

THE WEEK IN THE COURTS

BY JUSTINIAN

While they wish to mark out society's disapproval for the criminal act and pass a aentence that will have the maximum deterrent effect, they do not wish to inflict upon the miscreant and his family a harsher penalty than is strictly required, particularly when the cost of imprisonment is so high and the prisoos are grossly over-

Nowodays, with greater public awareness of what is being done in the name of society, the courts are less able indulge in thia kind of sleight of hand. Their sentences bave at one and the same time dar, . which listed all to reflect hoth approaches, leavprisoners brought to trial and iog it to prison administrators to mltigate the effect of imprisonment by the use of limited release powers in the form of remission and parole.

Thus judges may over-react and pass sentences that are inappropriate.

If their sentences are too long It is a curious feature of our ability to correct the excesses prosecutor, can be redefined.

Mr. Pickles should shine at Fontwell

UNLESS the weather suddenly deteriorates again, racing will Sussex, after the leavest spell for the sport since the winter

of 1962-63. While bad weather has prevented the Newcastle meeting. Derek Hubhard, clerk of the direct beneficiaries from the resumption are likely to be the local East Grinstead trainer, Michael Bolton, who is before the most revent freezeout to celebrate his 48th birth- up.

This afternoon's far longer admittedly poor opponents on the last day, and his principal rider, Ben

RACING BY DOMINIC WIGAN

lightly raced Mr Pickles in the opening 11-runner Shripney Selling Handicap Chase. Off the course for the whole course, reports no oroblema at .of last season because of a Fontwell. There the first two training problem, this eightyear-old, who is also owned by

Bolton, ran his hest race in a

long while at Folkestone just

.Now that Another Generation

and Joe Sunlight have been pulled out of the opening division of the Burnham Novices Hurdle, the way looks clear for Dr Steve, a stable companion to the now well-established Prince Northfields. A disappointment on his debut for Mr Moonraker's trainer, Mrs Nadine de Haan. They rely on the trip, in even more holding a recovery mission at the last

ground than that found at meeting here. He will have no Folkestone, will serve Mr problems, barring a repeat of Pickles well and there seems the blunder which cost him a little doubt that be will make chance of victory on his debut and may conceivably win a place in the Daily Express Triumph Hurdle line-up.

> FONTWELL 1.15-Mr Pickles* 1.45-Dr Steve***

2.45-Spikey Bill 3.15-Basb Street Kid 3.45-Rnyal Swan-

2.15-Slaneyse

RADIO

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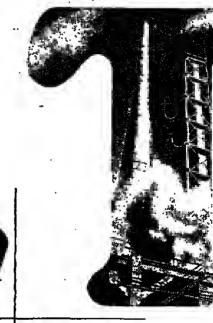
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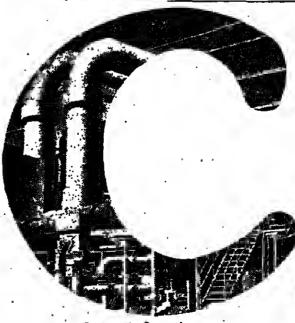
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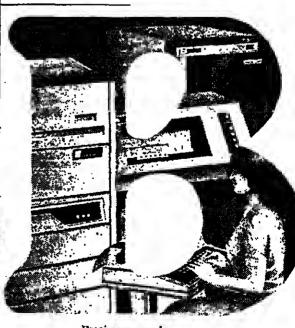


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THE MANAGEMENT PAGE

The dilemmas of an extended flight path

Moving into international operations has presented Air Zimbabwe with a series of problems. Nicholas Leslie reports

IN AN era when wide-bodied

narrow-bodied Boeing 707s on rising inexorably, particularly But each intermediate landing its internstional routes. It has for fuel, which represents one and take-off can endanger the its internstional routes. It has done so since it first began its noo-stop service to the UK in April, 1980, just before independence, and will probably continue to do so until a subject to the probably continue to do so until any airline of any independence, and will probably continue to do so until any airline of any independence.

financial necessity — ways and international routes. A very means can always be found to operate these expensive aircraft even if, like Zimbabwe, a Air Zimbabwe is opening up country has an acute shortage new routes. of foreign exchange. Air Zimbabwe decided, bow-

ever, that it would be more prudent to test the level of passenger demand before committing the airline to capital expenditure of a magnitude that would not only be daunting but would totally alter the pattern of financing and operation that had been adopted during 15 years of UDL

At the same time, its decision can perhapa be seen as an act of faith in the country's future. For the belief clearly is that if Zimbabwe remains politically stable and its economy expands, Air Zimbabwe should be able to move into line with other national carriers, yet remain on a commercially viable basis.

the transitional years-1979-80 and 1980-81-to full independence of the country, Air Zimbabwe's growth reflected move into the inter-**Passengers** national arena. carried rose from 365,771 to 402,274, but passenger kilojumped from 258.47m to 431.4m and cargo tonnes per kilometre flown rose from 2.5m to 5.14m. The 1979-80 profit was Z\$330,489. The 1980-

Formidable obstacles lia in visit to bere." Its avoidance of wide-bodied obligatory—and those airlines are cial considerations rather than financial necessity — was to be aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett. Such an approach takes on even greater modern aircraft cartainly must be to concentrate on long-hauls when opening np any new international service, says Eyett.

To date, Air Zimbabwe bas undoubtedly performed remarkably well. Starting with one Boeing 707 leasad from South Africa, it began in April 1980 a service three times a week from Salisbury to London's Gatwick Airport. Today, it has three 707s which it bought early last year from Lufthansa, the West German airline. for \$11m (including spares)

with a loan raised overseas.

There are now four flights a week, one of which includes a stopover in Frankfurt. The West German service was seen as a logical expansion because Frankfurt connects with most places of importance throughout the world, says Mervyn Eyett, manager of Air

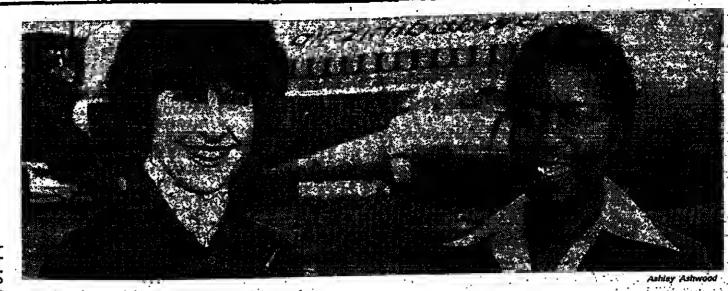
The businessman is seen as the cornerstone of passenger

aircraft are the automatic choice the way of belief becoming a of flagship for national airlines, one carrier has been studiously attempting to establish itself, at travelling an independent a time when the growth has a dapted two gone out of the international of its three 707s for use on long-Zimbabwe operates air travel market. Costs are haul routes of over 10 hours.

> Air Zimbabwe has to pay more for its domestic fuel supplies than any airline operating to or from Africa. This is a result of the high costs of transport-ing oil to this landlocked country. The airline hopes the situation may improve when the oil pipeline from Beira, in Mozambique — out of action since shortly after UDI—

> Nevertheless, Eyett maintains that the London route is operating profitably. Though pay-loads were lower than expected in the early months it has for several months now been achieving passenger payloads of at least 75 per cent capacity in both directions. Cargoes have not been as healthy, particularly on outward flights from Salisbury, but Eyett believes there should be a steady improvement. This is cleary of significance since 707s are designed to operate passenger/cargo carriers rather than predominantly passenger

One unfortunate and costly aspect of the distance between Salisbury and London is the flying time of 101 hours, nongrowth—as with so many air-lines—though the opening np require a back-up captain and of Zimbabwe to tourists is high flight engineer on 707s for any on the list of priorities. As flight over 10 hours' duration. Eyett remarks of the Frankfurt And, as with other operators, stopover: "Germans are great staff represent the second travellers in East Africa; I hope biggest cost the airline has to that a few will extend their bear after fuel.



THE major programme being undertaken by Air Zimbabwe is being tackled against a political background that political background that requires a rapid integration of blacks into operational, administrative and top management positions that have previously been the domain of the whites. In part, this has been achieved with approximately little

with apparently upheaval or unrest. example, according to Mervyn Eyett, Air Zimbabwe's general manager, the transi-tion from whites to blacks in the accounts department was achieved within a few months of independence.

Recruitment for reserva-tions and traffic handling staff has also been predominantly among blacks. Equally, the number of black stewardesses has risen rapidly, though this has largely been a case of new recruitment necessitated by the launch of more regional and international services

Eyett says it is recognised that if Air Zimbabwe is to com-pete on equal terms with other

national carriers like British

Airways and Lufthansa it must

eventually move into wide-bodied aircraft. The cost,

bodied aircraft. The cost, though, is enormous-running

into tens of millions of dollars

for not only the aircraft but for an engine testing cell and other

Various strategies are there-fore being considered to defray the expense. One option is

leasing. Another is a partner-ship with a nearby African country in a similar economic

position to Zimbabwe-a course

of action, though, that revives

back-up equipment.

This view has been fashioned partly by 15 years of UDI and

memories of the difficulties that Frankfurt stop, international be a priority—though this may finally split East African Airflights were generating some 33 per cent of total operating revenue, while 67 per cent was

Meanwhile, even the cost of Air Zimbabwe's training proearned from the warde and gramme is a financial strain which the airline may try to Kenya: Revenue from internaease by persuading other airlines, probably in Europe, to help train its apprentices and

Training is crucial both to the airline's ability to expand and to its prospects of gaining ticing passengers on the London route with more non-stop flights than BA (which has only two) revenue by servicing aircraft for other airlines. At present, it provides only transit checkand a standard of comfort and service that it reckons more ing for BA and Lufthansa, than matches those for like though it does bave other engineering work such as servicclasses of passenger in other airing Dart engines for Air

The impact of international operations on Air Zimbabwe's revenue has been swift. Before the introduction of the fourth new terminal would seem to service to London and the

Personnel priorities

Indeed, Eyett says that tewardess recruitment stewardess presented one of the biggest problems in meeting the schedule for the April 1980 launch of the Salisbury to London route.

Where auxiety does undoubtedly exist is in the technical areas — ground crews and engineering backup—and the flight crews.
There is a conviction among many whites that it is impossible, in the time scale contemplated to train blacks up to the level of technical competence they consider is necessary to keep the fleet of eight Viscounts and three Jet-powered Boeing 720s in service and to take on Boeing 707s, and, eventually, wide-bodied aircraft.

of war, during all of which or war, during an of which time the ageing Viscount turbo-prop powered alteralt. were kept in service without the benefit of any new spares; everything had to be made in house, therefore.

As a result of all this, an

engendered among many of the staff. A large number of the air-

line's technical staff have already voted with their feet on the integration programme and have left the country. This could well affect Air Zimbabwe's training schedule, for while young blacks and whites are now being taken on as apprentices on a 50-50 hasis the total will obviously be limited by the number of qualified people available to

Among flight crews, there is

wide-bodied aircraft it is en-

appointments to captain status of anybody, be they black or white, who does not have the number of hours' flying experience that has in the past been the norm for such a position—generally around 10,000 hours. But, again, this attitude must be seen to be caused partly by the isolation of the former Air Rhodesia and the fact that it is inherent among air crews who have for the most part long-service records.

anxiety rather than resent-

ment about the possibility of

Now, a pressing need for more pilots and flight engineers may lead not only to the appointment of younger, black pflots to senior positions, but also to older white pilots within a few years of retirement being passed over for training for wide-bodied aircraft—with a consequent effect not only on status but

not be so for a government with a whole host of priorities and limited funds.

Meanwhile, Air Zimbabwe regional routes to Zambia, with its smaller aircraft would Malawi, South Africa and seem to have the advantage in terms of the speed with which tional flights now exceeds 45 its passengers can be handled, per cent of the total. in addition to the frequency of Until Air Zimbabwe gets its its flights.

Eyett predicts that a wide-bodied service will be introduced sometime in 1983-well in advance of noise regulations that may force 707s out of Europe within the next five

But Eyett will continue to look hard at the economics of a But the one stumbling block move to wide-bodied aircraft to growth may be Salisbury and is strongly of the opinion Airport. Facilities are clearly that the frequency of services not designed to handle the 350 would probably have to be reor so passengers disgorged by duced until a growth in jumbo jets and on this basis a passenger traffic justified an

Management abstracts

The heard and compensation. F. W. Cook in Compensation Review (U.S.), No. 2/81: p. 37 (5 pages, table)

Describes the role of a board compensation committee; outlines the relationships, job characteristics / responsibilities and traits of a compensation director; recommends a schedule for, and the content of, commit-Alternatives to a visual display

unit. K. Jones + others in Computer Weekly (UK), 28 May 81: p. 17 (3 pages, fluis). Three articles describe methods of computer data inont which are said to eliminate the need for a visual display unit: 'hand-print' data entry pads, optical character recognipads, optical character buresa; tion, and the use of a buresa; each article expounds the virtues of a particular technique each of the first two mentions products, and the third concentrates on the security of confidential data.

Computers as terrorist targets.

A. Segerdel in Computing
(UK), 11 Jun 81: p. 20 £2 pages)
Discusses the possibility of

terrorist attacks on EDP installations; and relates experiences in Continental Europe; prepairs advice from a police crime prevention officer.

Encryption. L. Berkovitch in Business Systems and Equip ment (UK), Jun 81: p. 28 (41 pages, diagn.) Defines encryption, i.e. en-

ciphering data transmitte through electronic channels, vulnerable to eavesdropping, explains how it works and reports on Trustee Savings Bank's investigation into apply. ing it to their each dispens in order to prevent unauthorised access to oustamers' account

Controlling computer costs. J. E. Finney in Journal of Accountancy (U.S.), Apr. 81: p. 63 (41 pages)

Suggests that the best hope of reducing costs in a centralised computer department is to make users aware of the costs of the services they take; discusses ways of charging departments, and favours a method which uses prescribed rates per unit of time for each service or cost centre.

These abstracts are condensed from the abstracting journals published by Anbar Management Publications, Licensed copies of the original articles may be obtained at £2.50 each (including VAT and p and p; cash with order) ... from Anbar, PO Box 23, Wentbley HA9 8DJ.

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127,000

146,000

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Business courses

Changing Technology-A Director's Responsibility, London February 2. Fee: £95 (plus VAT) members, £125 (plus VAT) non-members of the Institute of Directors. Details from Education Director, Institute of Directors, 118 Pall Mall, London SWIY 5ED.

Profitability and Productivity Analysis, London. February 16-17. Fee: £160. Details from Department of Management Science, Imperial College, Ex-hibition Road, London SW7

World Coal in the 1980s London. February 2-3. Fee: £218 (inclusive of VAT). Details from European Study Conferences, Kirby House, 31 High Street East, Uppingham, Rut-land, Lelcestershire LE15 9PY. The Factory of the Future, Brussels, February 8-10. Fee: BFr 32,000 members, BFr 36,000 non-members of the American Management Associanon. Details from Management Centre Europe, avenue des Arts 4, B-1040 Brussels, Belgium.

Management of Innovative Pro lects. Slough. March 8-12. Fee: 345 (plus VAT). Details from the Registrar, Urwick Manage-ment Centre, Baylis House, Stoke Poges Lane, Slough, Berkshire, SL1 3PF.

The Directors' Workshop, Hen-ley. February 24-26. Fee: £395 (plus VAT) members, £445 (plus VAT) non-members of the Institute of Directors. Details from Education Director, Institute of Directors, 116 Pall Mall ondon SW1Y 5ED.

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Elizabeth Hall

Eight Decades

by DOMINIC GILL

The decades of the 1950s, enough, but sketches all. 1970s and the two new years of the 1980s were those represented at last Friday's concert the third of five promoted on the South Bank between Octo-

In theory, it looked to be a promising programme: three promising programme: three recent pieces; including a pramiere; by three British composers still in their early thirties framed by a pair of key works from the 1950s by Berio. In the event, it was cer-tainly not the penformances by the London Simonetta — all without exception of remarkable energy and high polish—
which prevented the evening
from catching fire. The fault lay
rather with the programme
itself strong on paper, but in
sound curiously without
sequence or centre—a pot
pour rather than a contrasting pourry rather than a contrasting integrated whole.

But sensitive new-music programming in any case, at the best of times, is a thankless task. It would have been difficuft to predict how powerfully the concert's opening work, Carter's early sonata for flute, obce, cello and barpsichord. would overshadow the rest of the evening: and how pothing afterwards would match its toughness, incisiveness and broad lyrical sense. The sonata is a marveflous work, a much- Hulse, is like all the Chemins neglected landmark both of its an "elaboration" for ensemble decade and of Carter's ocuvre, of an earlier solo Sequenza humanous in its confidence. Be and like all the Chemins, disside it the four succeeding pieces, including the Berio, or technically provocative, or as seemed no more than scrapbook essays, worthy and decent original.

Wigmore Hall

Brüggen & Tilney

by PAUL DRIVER

The Dutch musician. Frans for thoughts of inappropriate-Bruggen is accepted as being ness in the Corelli. the world's finest recorder player, so one need not have as part of the Early Music Network - the Wigmore Hall was packed almost to the exclusion of music critics. And there was no questing but that the enthuwith playing of the utmost vibrancy and flair. One's only real criticism was that the programme was too slender four enjoyable items imparting a light and modest tone perfectly. in keeping with Bruggen's approach to virtuosity.

The theme was the develop-ment of the baroque sonata; exemplified in a progress from six assorted little canzone/ sonate by unfamiliar - 17thcentury composers, through an arrangement of a Corelli violin sonata (G minor, op 5 no 7), the wonderful E minor harpsichord sonata nf C, P. E. Bach, to another arrangement, Mozart's G major sonata K 301, originally recorder family, leaving no room, have approved.

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Even Nigel Osbarne's I am Goya, the best of the bunch by far, and by now, after five years, the best known, seemed a shade more diffuse than I remembered it - more inclined to wander ber and May jointly by the BBC around a point than go directly and the London Orchestral Con- to it. But it's a fine work none certs Board ander the collective theless, elegantly made and title of Missic of Eight richly coloured, and sung ideally by ideally by a darker, more granite-timbred bass vnice than David Wilson-Johnson's. deserves an established place in the repertory. Jonathan Lloyds's Waiting for

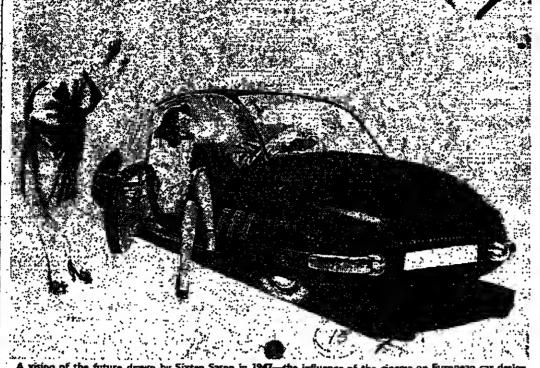
Gozo, a new Sinfonietta commission, was a pretty, slight essay for 13 instruments, 13 minutes long, huilt from requiring bluestinged three-note motifs. It explores some nice, brittle tex-tures and some interesting rhythmic devices, and leaves all of its developments tantalisingly unresolved. Attractive, if essentially soft-centred. John Casken's Firewhirl for soprano and ensemble, first beard at the Bath Festival two years ago, ia

a busy swarm of a score, crowded with contrast and urgent gesture, which seems to me tn cry out for some ruthless cutting and revision - if only the better to reveal the good things it undoubtedly contains (though could it ever survive such a cumbersome, clotted text as the poem by George MacBeth which it attempts to set?)

Berio's Chemin IV. beautifully played by the Sinfonietta's new principal oboe, Gareth appointingly never quite as taut musically interesting, as the

Colin Tilney's account of the Bach sonata did make one want to cavil. Its first movebeen surprised that for his recl- ment had correct buoyancy but tal with the barpsichordist Colin no excess of neatness, as if in Tilney on Thursday — a promo imply that the rough exprestim of the Early Music Centre sive daring of the music could be compounded by roughness in the execution, whereas the reverse is true. He was alive in the wilfulness and push of emotion in the slow movement no questing but that the enthu- and then has finale was marred stastic audience was rewarded by further lack of appointed finesse (the only kind) though ot spoke. The Mozart arrangement

was the jny of the concert. The public." partnership was impeccable, felicities like Brüggen's aqueous also phrasing (now he was playing on a transverse flute) and Tilney's delicate sprinklings of treble tone being mutually respected as well as individually displayed. The sonata was more enchanting thus than it ever is no violin and piano, and the combination of flute and harpsi-chord is a more successful one than flute and piano. Mozart than flute and piano. Mozart ful period piece. It is a long I am not, although this may began writing this someta for time since I have spent so long he hard to believe, against Mr finte and barpsichord in fact. for violin and fortepiano. The so Mr Bruggen has thwarted tiles on the floors, white walls feel that he has his wires first two parts were a charming him. But if he could have demonstration of the under-bathed in Bruggen's limpid attendants at the opening looked misced an opportunity. appreciated dynamic, tonal and world of sound even the flutecommanding possibilities of the hating composer would surely



Architecture

Designing ways by COLIN AMERY

When the poet Cowper wrote white with boiler-suit Mr Conran has been quietly wondering what to do with all the money he has made from stripped pix all the bright designs he has Habitat... been selling of Habitat shops. The perio

He has now taken over from Sir Roy Strong as a latterday Prince Albert and opened his design museum and study centre in the former boiler-house of the V and A. Prioce Albert and his diligent partner Sir Henry Cole bad similar aims to those of Mr Conran when they planned the South Rensington Museums. The Prince was aware Britain was losing ber industrial ascend-ancy over other European countries and he never intended the V and A to be another High Art Museum but o place where students and manufacturers could look at and emulate a rich variety of objects of the highest quality.

Mr Conran bas put some of his profits into The Cooran Foundation which is an educational charity devoted to the improvement of industrial design. He has refurbished the V and A's boilerhouse, in the yard between the main museum ing, with an independent entrance on Exhibition Road, as the first base for the Foundation and as a home for a series of temporary exhibitions. It is at the V and A but not of the V and A. The purpose of the Foundation is not to add to the attractions of the V and A engine or a vigorous vacuum designers and manufacturers: indeed Mr Conran said last week that "it's not for the general

behind this project there is no doubt that London has ocquired a powerful new design centre ence on manufacturers, but could also ottract the public in or coffee table can ever doesn't seem to mind the public

in an all white room, with white like the staff of a well known London hairdressers - indeed on what he reolly understands, Ricci Burns was on to the all- which is why some designers are

imagine he was thinking of room and puzzling to understand Terence Conran, nr even nf the why the whole place has been Victoria and Albert Museum. designed like a giant car-wash. designed like a giant car-wash. As one visitor remarked to me "it makes you long for a bit of stripped pine "-and so off to

> underlying purpose is more serious and will in time manifest itself in visually more otimulating ways than the first exhibition. This first show is historical. It bears the title Art and Industry, A Century of Design in the Products We Use and is cleanly designed by Alan Irvine, the doven of exhibition designers.

It is really a series of bioraphical case studies of a dozen or so designers and their products, and it claims to show how the artist moved his sphere of influence from the studio to the shop floor. This, seems in me, is the great fallacy of the whole enterprise. The artist does not get a look in at the Boilerbouse—the people exhibited and their products are the designers who have succeeded in industry, they are not artists. We all want to see well designed and pleasing building and the Huxley build- goods hut they are not going to be the things that move or inspire us.

Artists may be moved by the wonders of the oeroplane or the beauties of streamlining, by the idea of speed or the "keen unpassioned beauty of a great mochine" but an efficient cleaner are likely to leave their souls unlouched. It seems to me that the V & A and the Conran Foundation have got themselves into a muddle. The last director Despite the solemn intentions of the V & A was keen to keep the decorative arts alive by iotroducing more "high art." He was right. The presence of that could be an important influ- one Donatello relief speaks to the mind in a way oo telephone approach. Designers should be in and out of the V & A as o popping into Habitat so he matter of course but not to look shouldn't discourage them from at contemporary objects but in see the things that time and his new realm. see the things that time. The new gallery is a wonder-taste bave mode worthy.

Conran or his Foundation. I just

First, he should concentrate

about a God who "treasures up some years agn. It is hard to feel then spell out the reasons in his bright designs" I don't very comfortable in this new oingle syllobles. Then he would provide us with a useful lesson. It is unfashionable to say that some things are good and some are bad but it is just what is needed. Manufacturers need to be told. Look, for exomple, ot the design of British cars The period trendiness should today—why are they so often mot put you off because the underlying purpose is more designs? What belp is the dis-

play of an isolated elderly Saab in the current show? The second thing Mr Conran should do is to put his exhibi-tiono into the High Street. Isolating design in the remote enough. Habitat Design Centres would bring the message home to the customers and not debase art or elevate design beyond its tolerance.

designers present in this first show, The work of Peter Behrens (AEG Turbines), Normon Bel Geddes, Harold van Doren (kings of streamlining). Raymond Loewy (duplicating mochines) and the Swedish modern designers are all bere. The inside story of the Boeing planes also makes interesting reading.

The British are not likely to be much in evidence in the future as Mr Conran wants to show how the general level of international design hos been achieved. Sony from Japan are sbowing their wares ooon ond the windows will he npened onthe secrets of German electric razor design. The plonned Cortino will olso be seen— demonstrating the Foundation's commitment to the future.

pleasures of the process of design hut don't be seduced into thinking that skill can he equated with art. There is a real danger that the Boilerhouse Project will live up to its appearance and become an echo chamber for designers talking to themselves. Art and Industry continues of

the V and A until Morch 2.

Steaming 'for Poland

The company of Steaming is to give a special late night charity performance on Tuesday, February 2 at 11.30 pm at the Comedy Theatre. The proceeds will go to the British Red

Cross Fund for Polioh Relief. £10, £6 and £3.

Covent Garden

Manon by CLEMENT CRISP

Michael

Saturday night in an uneven performance suggested bow Michael Coleman and Monica Mason as Lescaut and his heretofire, and certain dance mistress—are an assured quartet; the company bas shown that, in MocMillan's full-length spectacles, their ensemble playing is vital, and is always vitally

Yet I noted a lack nf coherence, a tendency to elaborate portrayol to a point of self-parody (rather than innocent who finds himself ber. reduce it to an essential imoge dragged heodlong into suffering of choracter) which gave the and crime. presentation an over-ripe and indulgent air. I do not recall the trio of Gentlemen Inoking Merle Park's view of Manon In the nriginal Leighton Lucas quite as Dutch Doll-ish in their the first scene this Manan arrangement of Massenet is maquillage before; nor such desperate fuss with handker-powers with nane of the bluom chief and grotesque make-up, of girlhood nr that innocent

and I have never before been The squabbling between the whores seemed broader than performances looked undisciplined: neither Wayne Eagling nor Michael Coleman were at their cleanest in technique, though the stretch of Mr Eagling's line, and the vulnerability of bis emotions as des felt berself racing beodlong Grieux, show us the continuing into oblivion, ond Mr Eagling appeal of his portrait of an

I sensed only intermittently the dramatic impulse behind appeared all too conscious of her

The return of Manon to the snuff-box and centre-stage sexuality that makes her so Royal Ballet repertory on mugging, from supernumeraries. irresistible to every man who Coleman made sees her. Yet there has rarely Lescaut an unshaven scoundrel, been a more passionately yield-and I have never before been ing account of the effulgent easily familiarity may breed aware of him rifling G.M.'s duet which interrupts des caricature among interpretative pocket during the first scene Grieux' writing of the letter to artists. The principals of the in dea Grieux lodgings; the his father. The performance occasion—Merle Park and opportunist charm of the role reached a magnificent peak here Wayne Eagling as the lovers: was lost in predatory ferocity. as the lovers were impelled on a long, swooping wave of feeling: like surfers, they coasted gloriously nn its crest.

Nothing in the rest of the evening came near this in intensity or involvement until the final pas de deux, where Miss Pork's faltering steps had a terrified momentum, as if Manon surged desperately to sustain

I record with pleasure that the recent super-charged revisions by John Lanchbery to the score were not in evidence: much to be preferred, as Saturday's orchestral performance

Albany Empire

All Who Sail In Her

or absence out front of The

The opening of the new constant reference to the re- all that and allow the perfor-Albany in Douglas Way, Deptford, is a remarkable achievement by all concerned. The old place in Creek Road wao destroyed by fire in 1978 and rebuilt in five months. In 1980 the resident company, the Combination, was a victim of the Arts Council cuts, but £3m was raised to fund a new venue that, while it may indeed resemble "a Swiss pre-natal clinic" from the nutside (according to the new sbow), is, from the inside, more like an alternative and friendly amalgam of Ronnie Scott's and the Talk of the

Upstairs there is a large bar with hot food, downstairs seating at café tables for a couple of hundred. The Idea of John Turner's cabaret is to exploit those feelings of paranoia, anxiety and anger that have carried the project to its triumphant conclusion. Hence Much better to do away with

Committee. This latter body may be the charitable patrons of Deptford 100 years ago or the Arts Council assessors of today. saw him joto a top-class The historical parallels with Deptiord's popular entertainment history are ouperficially laboured in the show's oecond half, where Debby Bishop's con- audience with traditional banter temporary escape from the petrol pumps to self-fulfilment as a gifted rock singer is rewritten tn trace her progress from the local slaughterhouse to a post of servant in a large house. These are by far the most embarrassing sections of

the show, even though, para-

doxically, Mike Laye's produc-

starts looking like a theatrical

dense to hold up under the 'template staying away from this weight of historical pleading. splendid emporium for too long.

views, the VIP list, the presence mers their freedom. The outis Keith Allen, one of the Comic Strip gang, who has developed quite astonishingly oince I last comedian: relaxed, very fast, othletic and technically accombreak down a New York; ("Anyone here from Tunbridge Wells?") had me gasping with laughter.

His presence alongside John Turner's painfully unfunny material is all the more welcome for being so delightfully incongruous. The same is true of Jane Darling, a wonderful jazz dancer, who manages to tion, belatedly and mistakenly, send up Les Sylphides as well as everyone else. The show is a mess, but a promising one, The writing is nnt sufficiently and I shall certainly not con-

MICHAEL COVENEY

Shaw

Dmitri-Clown

To those that love the genre, plates, ond a cut-out bearl. a skilful and appealing clown can do no wrong, Dmitri, a native of Switzerland, is in London for the current International Mime Festival. He impressive - credentials, having worked with Marcel Marceau and Louis Maisse at the Clrque Medrano in Parisone-time stomping ground of Buster Keaton. Similarities with the lotter will be most apparent to British audiences as he flaunts his well-practised ineptitude in the face of the most curious physical conundrums. His flexile responses would do credit to the finest acrobat, while his white-faced

Clad in floppy jacket, red tights and knickerbockers he pada in with a tiny ukulele. Almost immediately, bis plec-trum sllps inside the sounding hoard and he scuffles off to pick up a heavy wooden trunk full of useful implements. These comprise among other nddities Tickets are available from the comedy Theatre hox office at monster rolling-pin, the inevit. Then monster rolling-pin, the inevitable bamboo rads and spinning as much the result of personal ROSA

smile soon wins our bearts.

trunk. Other delights include uncomfortable as hidden yellow on each side. Just in case the opectators consider it is all too easy, Dmitri offers front row viewers a trial turn with the odd happy surprise. bamboo rods. There were no undiscovered theatrical talents at the Shaw on Thursday, but there was nne unlucky woman with a talent for tolerance, as the visiting performer whipped ber handbag, threatened to pull it apart and tie it io they little knots. By turns smug, irritated, amazed, cov and desperate, this cheeky chappie could charm his

way into an Amazon's garden

predeliction os the innocuous My favourite is the rolling intervol drinks. He wanders on pin. The poor wee fellow all but for part two with a trolley full rolls himself into thin oir and of instruments and visuol gags then proceeds to leop into o make way for the ourol voriety. splendid elbow-stand while There is no doubting Dmitri's wheeling along the top of the musical virluosity, but the beauty and the comedy were los oral juggling, which looks pretty to me ond I began 10 feel increasingly sorry for the sad ping-pong balls continue to pop little lad. This may not be unout of the side of hio mouth. This intentional, but the mood of particulor act is especially victim becomes horridly infec-impressive with a spinning plote tious and ultimately, dare I say tious and ultimately, dare I say it, tedious. However, this clown is nothing if not disarming, and even repetition throws up the

> On the top of the trolley is a tiny box. At last he opens it and takes out an exquisite mini-squeezebox from which he draws out the sweetest rendering of "Ploisir d'amour' accompanied by those batting eyelids and that delicious maoic grin across a gash of month. Then he picks up another, bigger squeezebox and ploys the Iwo simultaneously, as they dangle from his hands like ugly ROSALIND CARNE

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F.T. CROSSWORD PUZZLE No. 4,774 DOWN

1 Agree to strike one of the 1 In what way had upbringing nobs (3, 2, 3) 5 Forgo father's drink (4, 2) 9 Squeezed woman for a start

ACROSS

then phoned abroad (5, 3) 10 Links instructional series (6)

12 Like bird to he pale (5) 13 Action rightly progressing (5, 4)

14 Drone in the bread-line (6) 16 Upper army contractor (7) 19 Dog by fire as well as golf club (7) 21 American general's method

of providing margin of 23 Second way to grow old in 17 Point to mother country safety (6) the wings (9)

26 Soldiers ringing for annul- 20 Beast without water (4) ment (6) 27 Hound person from eastern

France (8) 28 Set in ring (6)

produced beastly seat? (6) 2 Try to bring luck with inflammatory material (9) 3 GI not disturbed by hybrid (5)

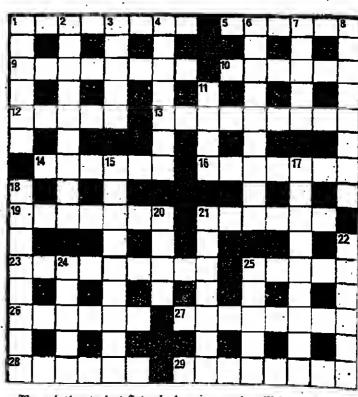
4 Go down as beginner (7) 6 Close hy an extended team (9) 7 Swell sound of suitable

material (5) 8 Unique yet completely common (8)

11 Logistically screening the Heart of the Matter (4) 15 Anticipate getting front seat (9)

coming out (9) 25 Poles trouble slow mover 18 Pub to exclude 1st century savage (8)

> 21 Rest - not easily moved -· keeps out of sight (4, 3) 22 Broken leg can deflect (6) 24 Saucy frolic (5)



The solution to last Saturday's prize puzzle will be published with names of winners next Saturday.

FINANCIAL TIMES

BRACKEN HOUSE, CANNON STREET, LONDON EC4P 48Y Telegrams: Finantimo, London PS4. Telex: 8954871 Telephone: 01-248 8000 -

Monday January 18 1982

Competition and the banks

THE MONOPOLIES Commis- remarked, hids for Royal Bank of Scotland is remarkable for its lack of emphasis on competition. It makes no attempt to analyse the banking industry one of the play of trends and forotsec most concentrated in the world. Yet this is the context in which any bld from an outsider should

It may be that, even after such an analysis, the Commission would still have concluded that a change of ownership for Royal Bank and its English subwould make no difference to competition. But the panel might have given more weight to the possibility, stressed by one of the two dissenters, Mr R. G. Smethurst, that either bidder would give a competitive boost to Williams and Glyn's. As Mr Smethnrst pointed out, "The fact that both bidders have a background in retail banking outside the narrow group of London and Scottish clearing banks is an added

Morale

Instead, the Commission devotes a large part of the report to the "Head Office" question—the effect on joh opportunities in Scotland if one of its largest companies is controlled from outside the The report says either merger "would reinforce the impression of a branch dence and morale in Scottish

The disappearance through takeover of independent decision making centres may status quo; the Commission did have affected the quality of not think this was true of Royal employment in some of Britain's towns and regions-in contrast to Germany and the U.S. where Head Offices of large companies are spread more widely. But if the "branch economy" argument is to be used to block mergers, it must be applied consistently-not only in Scotland but in other parts of the country and not only by the Commission but by the Govern-ment in deciding which mergers

should be referred to it. The Scottish factor influenced the Commission in rejecting a foreign hid for Highland Distilleries in 1980, but in no role in mergers policy. As the other dissenter in the Royal Bank case, Sir Alan Neale, cial structures.

sion's report on the two rival economic union in which resources are free to move to take advantage of available opportunities. He did not believe that beaming mergers effect on performance, profit in order to retain particular ability and service to the levels of decision making in customer of the mergers of the Scotland can make enough 1960s, which made the British difference to the otherwise free play of trends and forces to be justified." In his view the role of the Royal Bank in Scotland and its service to the community would not be affected by the proposed change of ownership.
It is true that the Commission

is required by the Fair Trading sidary. Williams and Glyn's, Act to pay regard to the try and employment in the UK. But this has usually been taken to refer to factory closures rather than changes of owner ship. The fact that four of the six panel members chose to put so much weight on this element illustrates once again the vague ness of the criteria laid down in the Act and hence the unpredictability of merger

The other main theme in the report concerns the Bank of England. The Commission did not share the Bank's anxieties about the difficulty of supervising a bank controlled from Hong Kong, but saw force in the argument that the transfer to an overseas owner of "a significant part of the UK clearing bank system" could create conflict of interests which might be detrimental to the UK. This was no more than a "presumption" in the Commission's view which economy and diminish confi- might be rehuttable in particular cases—if for example a UK clearing bank was badly in need of fresh blood, a bid from overseas might be preferable to the Bank.

Suspicion

Although a majority of the panel in the end endorsed the Bank of England's view that the bid from Hongkong and Shanghai Banking Corporation should not be allowed, there is nothing in the report to justify the remarkably strong reaction shown by the Bank at what it chose to regard as a challenge to its authority. The suspicion remains that in being too jealous of its powers the Bank risked weakening the system of general the transfer of decision information supervision which making from one part of the is its special pride. This rests UK to another has played almost on respect for the Bank's judgment, not on its assertions to be the sole authority on finan-

Understanding Germany

hy strong implication West Ger- nation remains divided. many, have been getting a had In the 1950s it was relatively Press recently, in the U.S. as straightforward. The prime well as in France. Here, for goals were economic recovery instance, is a columnist of the and international respectability, New York Times commenting the latter being achieved (second hand) on a dinner party through membership of NATO given for Herr Schmidt and a and the Common Market. collection of American guests by the German Embassy in Washington a week or so ago: the Chancellor came across as "nervous, petulant, self-deceiving and irresolute — a reflection of what some of the staunchest supporters of the Atlantic Alliance fear may be the state of his nation."

Tensions

The immediate causes of a certain disenchantment with Herr Schmidt as an ally are the declaration of martial law in Poland and his reluctance to respond with sanctions against Poland or the Soviet Union quite as strong as the U.S., in particular, would like. Yet the tensions between the Federal Republic and the U.S. go back a good many years. Those with long memories will recall that the Germany of Konrad Ade-nauer used sometimes to be criticised in the U.S. for being almost too faithful to the Alliance and for being incapable of developing an eastern policy

of its own. That was the period before detente. More recently, the Germans have been blamed within the Alliance for failing to fulfil the Nato commitment of raising defence expenditure by 3 per cent a year in real terms, for taking too narrow and central European a view of the world and for seeking almost a special relationship with the Soviet

Before the latest tensions become any more serious, it is worth trying to look at matters objectively. For ohvious objectively. For ohvious reasons, West Germany entered the world scene late and with a reputation to live down. A decade ago it was not even a member of the UN. It is not, like Britain or France, 2 longstanding nation state. policies are very heavily influenced by geography as well as history. It is in the middle

CHANCELLOR SCHMIDT, and of Europe and the German Thought of rapprochment with the East was excluded by the cold war.

By the 1970s, however, there were new openings. West Germany played its full part in the development of detente and began to assume a more inter-national role. No less important, the Soviet Union recognised realities and dropped its attitude of outright bostility towards Bonn.

What has happened since bas been the near breakdown of detente in East-West relations for reasons that were none of the Germans' making. The West German problem today is how to play a role in inter-national affairs, compatible with the country's economic strength and with membership of the Alliance, that fosters rather than hinders East-West

It may be that it will prove impossible to find a satisfac-tory answer. Certainly the continued expansion of the Soviet military machine has not made it any easier. Yet in the mean time there is a case for listen-lng more closely to what Herr Schmidt and his colleagues have to say about West Germany's particular dilemma of being canght between East and West even though its political and economic sympathies lie overwhelmingly with the West

Two developments seem to us rather healthy. One is that these matters are now being discussed more openly in the Federal Republic itself. Too often in the past there was a tendency to regard any dissent from conventional wisdom about East-West relations and the role of Germany as tantamount to disloyalty. The other is that Herr Schmidt is speaking more strongly within the Alliance. That should be a cause for dialogue, not irritation.

bring services like electronic banking to the bome. By freeing AT and T to compete outside the regulated tele-

phone husiness, the anti-trust settlement which the company reached with the U.S. Justice Department 10 days ago foreshadows a massive upbeaval which will extend well beyond the traditional frontiers of telecommunications. The reverberations will also he felt in such industries as computers. consumer electronics and Pubishing, both in the U.S. and internationally.

HE DISTINCTIVE bell-

can Telephone

ing up in all sorts of unex-

pected places. On sophisticated office automation products, for

example, or on personal com-

puters. And, in a few years'

time, perhaps, on the new

generation of computerised in-

formation systems which will

shaped insignia of Ameri-

The settlement must still be approved by the federal judge in charge of the case and may also be modified by Congress. As it stands, it seems highly favourable to AT and T. which is required in exchange to shed within 18 months its extensive but commercially pedestrian local telephone company in-

But the gains in the new era of competition opened up by the settlement seem unlikely to be all one way. Other companies, including such giants as IBM and Xerox, have tong expected to have to confront AT and T directly one day and have been squaring off for the battle. Moreover, AT and T has still to show how effectively it can mobilise its vast financial and technological resources in fast-moving, high-risk markets. Much of the immediate im-

pact of the settlement is likely to be felt by the smaller companies which compete wih AT and T in the long-distance telephone market. Known as specialised common carriers, they include MCI, an independent company based in Washington DC, and offshoots of Inter-national Telephone and Telegraph, Southern Pacific and Western Union.

These youthful companies operate their own microwave radio transmission networks, which connect with AT and Ts local circuits. By charging as little as half of AT and Ts tariffs and marketing their services aggressively, they have built up a fast-expanding busi-ness. Their combined revenues have grown in less than a decade to \$800m last year, against AT and Ts long-distance evenues of more than \$200n. In the short-term, they stand to benefit from the settlement.

Removal of its local telephone monopoly will mean that AT and T will no longer have first choice of higher quality subscriber lines and will have to pay the same "access charge" as its competitors to connect with them. The smaller carriers will also be free to expand geographically and to their services to

AT&T'S NEW AMBITIONS

Squaring up for a fight

By Guy de Jonquieres

THE MAIN TELECOMMUNICATIONS COMPETITORS

Telegraph may soon start turn-AMERICAN SATELLITE

Provides voice, image and data communications via satellite. Owned jointly by Continental Telephone and Fairchild Industries. Owns 20 ner cent of Wester setellite system. Turnover n.a.

COMMUNICATIONS SATELLITE CORP

Holds monopoly of U.S. international satellite communication operations Sole U.S. representative to Intelsat, of which it owns 23 per cent. 1980 turnovers \$300m.

Supplies computer services, telephone systems and data committions. 1980 turnover: \$71m.

CONTINENTAL TELEPHONE

Major independent telephone company operating in U.S. and Canada. 1980 turnover: \$1.3bn.

GENERAL TELEPHONE AND ELECTRONICS Owns largest independent telephone system in the U.S. Other activities

include manufacture of telecommunications equipment and lighting, operates data communications network. 1980 turnover: \$10bn. Fast-expanding company founded in 1971. Operates U.S. data com-munications network, international telex and radio-paging services. 1980

Part of ITT. Manufactures wide range of telecome ment. Operates international telex service and U.S. long-distance telephone network, "Citytel." 1980 turnover: \$7.2brl.

Offers long-distance telephone service between more than 100 cities 1980 turnover: \$234.2m.

Rapidly-growing Canadian PBX manufacturer founded in 1973. Supplies British Telecom and is building large factory in South Wales. 1980 turnover: C\$111m.

push-button receivers. But in the longer term, these

advantages may be erased. AT and T has kept its long-distance tariffs high to subsidise local telephone services. separated from its local operations, it will have room to lower its long-distance rates close to the levels charged by its com-

AT and T also intends to carve out a share of another growth business, the market for transmitting and processing computer data. Data trans-mission is still only a fraction of the total U.S. communications market, but it is expected to mushroom over the next few years with the spread of such services as electronic mail and electronic banking.

The market is corrently served by four companies, known as value added carriers. with a combined turnover of about \$500m last year. They are Telenet, a subsidiary of General Telephone and Electronics (GTE), the higgest of the independent U.S. telephone companies, Tymnet, part of the Tymshare computer service house; Graphnet, which helongs communications.

AT and T plans to introduce this year its Advanced Communications Service (ACS), which has taken more than five

instead of just to those with huilding a simultaneous inter-

The service is expected to play central role in AT and Ts future strategy to penetrate the office antomation market. It ing still. It has taken a major tronics group. intended to weaken IBM's hold over computers, by enabling IBM products to be linked directly to other manufacturers' machines. It should also provide a vehicle for a wider marketing effort in the

AT and T's principal beachhead in the office at present is through the supply of private branch exchanges (PBXs). But though the U.S. market for new PBXs has been growing by 20 per cent annually to reach \$850m last year, AT and Ta share has declined to around half from almost total domination a decade or so ago.

The steady erosion of its monopoly has attracted more than two dozen PBX competitors. They include telemirations companies such as GTE and Rolm of the U.S. and Northern Telecom and Mitel of Canada. Computer companies Honeywell and Datapoint are in the fray, too, and

PBXs. It is also expected to with AT and T's long-distance years and many millions of widen its product range to in- network. dollars to develop. As well as clude sophisticated new office. The flexibility and versatility transmitting data. ACS is terminals which could be condesigned to enable technically nected through PBXs to ACS have attracted other big comincompatible computers to con- and to its long-distance tele- panies to the market as well. verse with each other, a task phone network. Dr Alan Pearce, Fairchild Industries and Contionce compared in complexity to a Washington telecommunica- nental Telephone own American

Canada's largest telecommunications manufacturer with successful inter-national record. Also sells computer terminals and systems in U.S. 1980 turnover: \$2.1bn.

Operates international voice and telex services and U.S. satellite comnications services. 1980 turnover of these operations: 5253.5m.

Manufactures military computers and telecommunications equipment, notably PBXs. 1980 turnover: \$201m.

SATELLITE BUSINESS SYSTEMS Owned by ISM, Aetna Insurance and Communications Satellite Corpora-

tion. Offers advanced satellite communications services to comparin the U.S. 1980 turnover: n.a. SOUTHERN PACIFIC COMMUNICATIONS

Operates long-distance voice network and plans satellite system. Part of Southern Pacific group with interests in railways, freight transport and pipelines. 1980 turnover: \$152m.

Major U.S. computer time-sharing company operating U.S. and international data network. 1980 turnover. \$235.9m.

UNITED TELECOMMUNICATIONS

Second largest U.S. independent telephone company, sells equipment and data processing services. 1980 turnover: \$1.9bn.

Provides wide range of communications services, including telex, telegraph and satellite systems. Dominant telex operator in U.S., recently allowed to enter international market as well. 1980 turnover: \$794m.

Research essistance: Rivke Siber.

tions consultant, believes that Satellite Corporation, pretation system for the United AT and T's Western Electric is linked with Western Union's Nations.

AT and T's Western Electric is linked with Western Union's manufacturing subsidiary will Wester satellite system. Other "make it a formidable competi-

IBM has itself not been standstep towards competing directly with AT and T at the most advanced end of the communications market through its backing for Satellite Business Systems (SBS). It is also expected to expand its communications interests through acquisitions, following the recent termination of the Justice Department'a anti-trust case against it

SBS, a consortium owned by IBM, Communications Satellite Corporation and Aetna, started operating commercially last year. It is a highly sophisticated and expensive—service, designed to handle the internal communications of large businesses with offices scattered throughout the U.S.

transmit and receive voice messages and large volumes of comto Graphic Scanning, and marketing in the U.S. a PBX man thousands of miles apart modernisation programme. Uninet, part of United Tele which it currently supplies to hold conferences on closed. It is widely believed which it currently supplies to to hold conferences on closedcircuit television. SBS plans customers in Europe. circuit television. SBS plans
AT and T is likely to start later this year to launch a fighting back soon, when it is switched telephone service allowed to sell as well as lease which will compete directly

companies involved in communitions satellites include GTE and RCA, the diversified elec-

AT and Ts new ambitions also extend beyond the U.S. coastline. Last year it set up an international division to offer consultancy services and to market Western Electric equipment overseas. It recently agreed to buy 45 per cent of Telectron, Ireland's biggest telecommunications manufacturer, and this week it will establish its corporate identity in Britain by heing listed on the London Stock Exchange. Its emergence on the inter-

national scene, from which it has been absent for most of the past 50 years, spells stiffer competition for ITT and for foreign companies such as Sweden's L. M. Ericsson, West Germany's Using dish aerials on their Siemens, the Dutch Philips office roofs, SES customers can group and Nippon Electric and Fujitsu of Japan. A couple of years ago AT and T won a major puter data via satellite. The order to supply public telecomsystem, due to be linked to munications equipment to South British Telecom's network later Korea and it also has a small-It is widely believed in

Washington that the Justice-Department's decision to end its . anti-trust case was influenced by the Reagan Administration's desire to strengthen American technology. Western Electric will be

much more aggressive than in the past," says Mr Brad Peery, dominate new markets an AT and T analyst with U.S. has dominated old ones."

brokers Paine Webber. Like other industry observers, he believes that the company may decide to expand into such fields as personal computers - a market which IBM entered last year and equipment for sale broadcasting and television equipment.

AT and T has been eyeing with some interest the existing American market for cable television and the potential for new electronic home information systems like viewdata. It has already carried out field trials of a system which stores Yellow Pages information on a central computer and transmits them on demand to residential terminals.

But it would be bound to face strong opposition if it tried to move in as a commercial operator in these markets. The cable television industry and newspaper publishers see AT and T as a major threat and there is considerable sm port in Congress for proposals for legislation which would limit the company's room for expansion.

Probably the biggest uncer-tainty about AT and T's future, though is how successfully it can adjust to competing in increasingly diverse high-technology markets where eitrepreneurial agility often counts for as much as sheer sizeaimost a century of riding a monolithic, though highly efficient, monopoly.
The company certainly has

the necessary technological financial and manufacturing resources. But does it possess the management skills and marketing flair required to search out promising new com-mercial opportunities and respond quickly to them? The company has sometimes

been slow to torn to commercial advantage the innovative achievements of its research and development arm, Bell Labs. Canada's fast-growing Mitel for example, has been highly successful selling PRXs which use advanced microchip technology pioneered at Bell Labs. And when AT and T needed new local exchanges few years ago, it turned to another Canadian company, Northern Telecom, to supply

Some industry experts also believe that AT and T may find the going tougher than expected in new business communications services, such as ACS. Paine Webber's Mr Sandy Gar-rett points out that Xerox withdrew plans to launch a similar service, X.Ten, after concluding that it would take too long to recover the buge initial investment required.

But if AT and T shares an of these doubts, it certainly is not admitting to them publicly, and none of its prospective competitors can afford to dismiss lightly the challenge which it is likely to pose them in Yuture Says Dr Pearce: "Why should AT and T agree to dump industry against the growing should AT and T agree to dump Japanese challenge in electronic its secure local monopolies to enter untested markets? The answer must be that it is abso-Intely certain that it can dominate new markets as it.

Men & Matters

Outpost

Many a public platform is going to be the dulier for the departure of the flamboyantly moustachioed Tom Jackson who retires in June after 15 years as general secretary of the Union of Communication Workers, the postmen's unlon.

But chatting to him after the election of his successor, Alan Tuffin, I could detect no regret in Jacksoo's going. "It will be wonderful to wake up and know that 200,000 people don't depend on you making the rightdecision," he says.

He has been keeping his familiar profile a little lower

these past few years, declining many of the media and public engagements that made him perhaps the most had unity-recognisable of our union

Jackson does not intend to become a "trade union odd-job man" like some of his colleagues on he TUC who just cannot give it all up.

He will remain a government representative on the BP board until his contract expires in 18



takeover bid. sir?"

he says firmly, will be it. At the age of 56, Jackson intends to combine business

with pleasure by opening an antiquarian bookshop in York, He has a long held passion for old books, especially childreo's books. It is no coincidence that UCW conferences have usually been held in bibliophile resorts where Jackson could wander through the second-hand booksbops between debates. And what of the future of

the union to which Jackson has been devoted since he joined the Post Office as a messenger boy in 1939? "The greatest chailenge will be new technology," he says. "The letter post will reduce dramatically, though you'll still need postmen to carry packets and our telephonist members will still be wanted. But sooner or later, we'll need to merge." With Jackson gone, in the meantime, how shall we know who to blame if the post is late?

Cover charge

Postal changes of quite a dif-ferent stamp are being mooted in the Channel Islands where the smaller isles in the bailiwick are making a determined hid for a share of Guernsey's film a year philatelic profits.

When Guernsey took over postal services from an indulgent GPO in 1969, it hanned independent and Incrative issues by such neighbours as the 500-acre island of Herm or the even-smaller isle of Lihou whose soldierly owner Patrick Wootton almost declared UDI. By threatening to go it alone, Alderney has just forced Gazernsey into a compromise

meniorative stamps and hand over the profits. Now Sark wants own stamps, The island's hereditary ruler Michael Beaumont is to of

agreement to issue Alderney

regional" definitive and com-

issuing Sark stamps, he says, Guernsey will face a claim for payment for using Sark scenes to illustrate its own stamps.

Left bank

More senior executives, I suspect, will follow Patrick Moorsom in a drift from the London offices of the French banks as the ripples of Mitterrand's nationalisation spread across the Channel.

Moorsom ia leaving the Banque de Paris et des Pays-Bas, where he has been a sousdirecteur, to join Cayzer, Gartmore next month as managing director of its corporate finance arm, Cayzer Ltd. "Unsettling uncertainty about

the future was an important element in the decision to move, " Moorsom tells me. compared unfavourably with the prospects at Cayzer where former N.M.F. Rothschild vice-president David Seeker Walker, who now runs CG, is beginning to bulld up its corporate finance activities.

Until now these have lagged well behind CG's interests in investment management, handling funds of fibn, and the management buy-out services which featured most prominently in the recent deal for moneybrokers Exco International.

But with £10m available from Walker tells me that more was ambassador to St Petersresources will be put into the burg in the early 1880s and financing of small to medium- later Viceroy of Ireland. sized businesses. Moorsom's appointment is the first of several being made to

this field. His own background should make him feel at home inside the British and Commonwealth Shipping group of which Cayzer is part. The soo of a Welsh shipowner, Moorsom was a director of shiphrokers Galbraith

reinforce the Cayzer team in

months "when I don't expect move a proposal to that effect they'll want me any more." The in his feudal parliament, Chief Labour Party will continue to enjoy his allegiance — but that, Should there be any delay in Merchant Bank as well as the volved in ship financing for Amex Bank and Barclay's Merchant Bank as well as the Banque de Paris.

Arms and the man

Financial journalism is becoming as dangerous as sports

Colleagues covering the ACC shareholders' meetings last week were held at bay hy a security lady whose attractive blonde appearance belied her determination to prevent the from crossing threshold.

While male reporters peered through a partition at the pro-ceedings, however, a woman from one newspaper entered into an ill-advised scuffle with the guard, retiring with what, she thought, might be a broken Little wonder then that the

newspapers seem to have been unable to tell their accents from the apostrophes in writing about the new Australian chair-man Robert Holmes a Court. A quick giance through the columns in the last few days bas revealed at least six other versions of the elegant entrepreneur's surname — all wrong. He is not Holmes a Court, a Court, a' Court, a 'Court, A Court or even A'Court.

As a second cousin to the sixth Baron Heytesbury, the ACC bidder traces his ancestry back to William Pierce Ashe à Court, an army colonel and MP who was created a baronet in last month's rights issue. Secker 1795. His son, the first Baron,

Mental note

Written on a poster in a Blr. mingham psychiatrist'a waiting-rom: "Please adjust your stress before leaving."

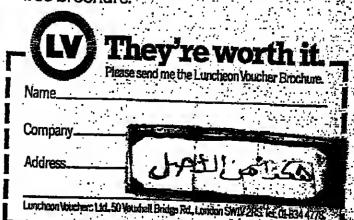
Observer

Luncheon Vouchers for your secretary could cost £50 a year.

How much would a new secretary cost you?

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FINANCIAL TIMES SURVEY

Monday January 18, 1982

CEOMENUTE RS

The battle for new computer-related markets is being waged at national as well as company level. Most industrialised nations now view computer and electronic technology as a priority and provide support schemes.

New product areas erode frontiers

BY GUY DE JONQUIERES

"steam power" of the new would defindustrial revolution, then the librarians.

1980s must surely be the decade

Just as to of the express train. It is bardly stretching the analogy to add that it also promises to be the era of the motor car, the jet aircraft—and, penhaps, even of the space shuttle.

For computing has now reached a point, in terms of its availability, cost and versatility, at which its social and economic consequences can be compared to that of mechanised transport. Both have altered human perceptions of the world by radically transforming previous concepts of time and space.

The computer today can pertions which would bave once required thousands of man hours to carry out, or which it would have been physicaly im-possible to do at all. It can compress into a space, occupying only a medium-sized room, volumes of information which would fill several libraries if while transport has developed committed to paper. And it steadily over the past 150 years, can retrieve, order, and cross most of the notable achieve-

would defeat a regiment of

Just as the oil, coal and steel industries grew up around the transport has incressed human railways during the 19th century, so many of today's indus-tries have come to depend on computers for their lifeblood. Without computing power the world's banking systems would grind to a helt markets would cease trading, commercial air-craft would be grounded and much manufacturing plant would no longer be able to func-

Government and public services would be paralysed, bos-pitals would be deprived of many diagnostic and treatment facilities and traffic light systems would cease to operate. Most types of modern military equipment would also be immobilised.

There are, bowever two significant differences between the history of mechanical transport and of computing. One is that

COMPUTERS are the reference them at speeds that ments in computing and their eam power of the new would defeat a regiment of practical application have taken place during the past 40 years.

Second, while mechanised mobility, computing—by vastly expanding man's access to infor-mation—bas also enlarged the range of activities which he can perform without needing to move from one spot. For example, the engineer can use his computer to calculate critical specifications by simulating conditions whose effects could otherwise be determined only by a lengthy process of trial and error in the field.

Choice narrowed

But in other respects the stages of development mechanised transport and computing are remarkably similar. The state of data-processing in the 1950s and 1960s can be compared closely to railway

Just as rail passengers are restricted by the geographical layout of the rail network and computer ushers in the same by the timetable of the trains personal freedom as did the

processing power and cumhersome operatiog procedures of

Most data then could only be was transported physically to the computer, processed, and results shipped back again where they were needed. Each user's requirements had to be fitted into a rigid timetable tailored to try to meet everyone else's needs. There was no boarding or alighting from the data-processing train between stations.

most compoters at that time

narrowed the choice of the

Then came distributed datathe minicomputer. The advantages of this development may be compared to those of the bus, able to adjust both its timetable and its route map to suit varying conditions, but atili bound to meet the needs of all

The arrival of the personal

offers the individual greatly-expanded choice and control, bringing to his desktop processing power and data storage capacity which a few years ago would have been available only batch-processed: informatioo oo a large central computer. Moreover, it is available for use on demand.

The era of the jet aircraft is just starting to dawn. It is the result of the merger of comnoter and communications technology into a single entity, whose essential characteristic is the digital signal or "bit," expressed either as a zero or as a

The digitisation of processing and the spread of communciations enable networks to be turned into vast, high-speed data "highways" along which vast quantities of information can travel from one computerised device to another. And because any type of information can be expressed in its passengers at ooce and digital form, modern networks under the control of a single can carry not just computer data but voice communications, text, images and transmissions.

This technological conver-

gence is the underpinning of the emergence of a new "informa- industry's ranks, dominated tion society," whose electronic only a decade or so ago by arteries will link homes, offices and factories in a huge computerised network. By com-municating information in-stantaneously to the point where it is needed, the network will remove the need for many

types of travel—to the shops, to the bank, to the library, perhaps even to the office. The longerterm consequences for society as a whole can still only be

Strategy change

How quickly the "information society" will be attained, and the precise form it will take, are also uncertain. Predicting the speed at which technological advances will be translated into products and systems is notoriously difficult. But the increasing pervasivecomputer power is being reflected in already changes in the structure of the computer industry

CONTINUED ON PAGE III

relatively few small companies

bave been swollen by the arrival

of smaller newcomers which

have successfully combined

innovative ideas with tech-

nological

nological expertise and entrepreneurial initiative to carve out market shares.

In many cases new growth

markets have been pioneered by

the entrepreneurs rather than established companies. Thus, Apple and Commodore led the

way in personal computers,

Wang in display word pro-

in minicomputers.

essors and Digital Equipment

At the same time, the older-

established companies have had

to expand into new product areas and adapt their develop-

ment and marketing strategies

in order to remain competitive.

Thus, the past year has seen

IBM enter the persocal com-puter market and ICL diversify

from its base in mainframe com-

puters into office equipment,

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scope for expansionXX Editorial production of this survey was by Mike Wiltshire and Arthur Dawson. Design by Philip Hunt.

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THE FASTEST GROWING PCM SUPPLIER IN THE UK.

John Fujii charts the winners among Japanese companies

Japan steps up the race against IBM

IN LESS than 30 years since Japan's first domestically developed computer was introduced on the market in 1954, Japan has come to the forefront of the world's computer industry.

The first domestically developed computer was introduced as Nixdorf of West Geryloped Computer and peripherals, of years and Olivetti of Italy per cent out of total revenues although they are primarily in of Y1,074.95n or \$4.75n. The first big development in

the process was in 1971 when the Ministry of International Trade and Industry provided approximately \$300m in Government funds between 1972 and 1976 to meet the challenge of the IBM 370 Series.

At that time, Fujitsu, Hitachi and Mitsubishi Electric were instructed to pursue the development of an IBM compatible system while Toshiba Corporation and Nippon Electric Company were told to develop noncompatible architecture.

Later, Mitsubishi and Oki-Electric Industry dropped out of this programme to go into small and medium computers.

Today, Fujitsu and Hitachi have the world's most powerfut large-frame computers, the M-Series, to compete with IBM's latest 3081 which offers 14 MIPS tmillions instructions.

per second).
Hitachl's HITAC M-280H bas
17 MIPS while Fujitsu's
FACOM M-380 has 15 MIPS and the M-382 offers 30 MIPS. The ACOS 1000 developed by Nippon Etectric has 29 MIPS.

In these few sbort years. Japanese large-scale computer manufacturers have held down IBM Japan's growth in the world's second largest market while cutting into IBM penetration in the developing countries.

There are six big general purpose computer manufacin Japan, Nippon Electric (NEC), Toshiba, Mitsubishi and Oki which dropped out of the large-frame business by virtue their tie-up with Nippon Univac Kaisha.

The big American computer

the smaller machines.

Fujitsu, Japan's top comtronic data processing (EDP)
revenues. Fujitsu reported
revenues for the fiscal year
ending March 31 1981 of
Y581.6bn or \$2.77bn of which \$1.8bn came from its informa-tion processing division. This was up 17 per cent nver the. previous year.

At the same time, IBM registered calendar 1980 revenues of \$1.6bn, 4.3 per cent over 1979. However, in net iocome, IBM Japan came out

FUJITSU

The top computer manufacturer bettered IBM Japan last year for the second successive year in

nn top with \$174m or 10.7 per cent of sates compared with Fujitsu'a \$86m or 3.2 per cent of total sales.

Fujitsu exports totalled \$389m or 14 per cent of sales, up 2.8 per cent over the previous year. IBM Japan reported 1980 exports of about \$327m, a 20 per cent increase. Hitacbi reported sales of

Y260.7bn or \$1.185hn in computers and peripherals, up 16 per cent, in fiscal 1980. Electronic. processing equipment electronic devices accounted for 25 per cent of the \$9.8bn in total sales. Hitachi's global exports totalled \$2.5bn. Electric reported

POWER

Of NEC's glubal exports. computers and peripherals accounted for 5 per cent, computer manufacturer, bettered accounted for 5 per cent, computer manufacturer, bettered accounted for 5 per cent, computer manufacturer, bettered accounted for 5 per cent, and 18M Japan during 1980 for the munications equipment and levices 40 per cent, electric devices 20 per cent and bome electronic products 27 per cent. NEC said that a third of its \$2.961bn sales in Japan came from Government and official lostitutions. Exports were np

30 per cent to \$1.291bn. Fujitsu and Hitachl have approximately 60 per cent of Government agency

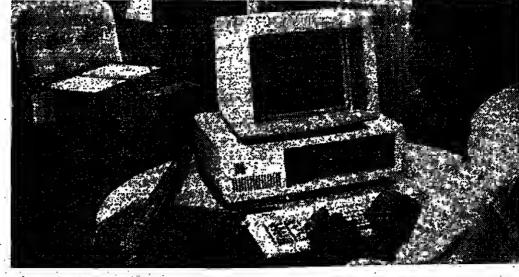
Fujilsu cites its wide range of computer usage by such institutions as the Federation of Bankers Association of Japan, the Ministry of Labour, Daikyo Oil, Kyoto University, Kawasaki Steel and the National Space Development Agency of Japan.

Despite the inroads made by the Japanese computer com-panies, IBM Japan still holds on to a 28 per cent share of the Japanese market, mainly in large-scale systems.

large-scale computers (over Y500m in vatue). IBM Japan was first with 40 per cent of the market, according to the figures provided by Computopia of June 1981.

Others in targe-scale market share were Hitachi 17.3 per cent, Fujitsu 16.1 per cent, Univac 11.7 per cent, NEC 10.5 per cent, Burroughs 2.2 per cent. NCR 0.4 per cent, Mitsnbisbi 0.3 per cent and others The purpose of the Mitsubishi

programme, as reported, was to provide a wide range of computers so the Mitsubisbi available by fiscal 1990. of comp group companies could "Buy The schedule calls for re- and all Mitsubishi." It was reported search to begin in 1982, hard-included.



the Mitsubishi affiliated companies promised to turn in their IBMs for Mitsubishis, if they were as good. Mr Kato said that in this day of business. companies buy the best equip-ment regardless of group

The Japanese are not satisfied with just keeping up with IBM. They are now looking ahead in the computer business with a "fifth generation" computer,

Despite inroads domestic companies, it still holds a 28 per cent share of Japanese market

just as they have developed a 256K RAM (random access memory) chip already.

The Japanese Government and the private sector, including the six domestic computer manufacturers, the Electronic Technology Comprehensive Research Center (ETCRC) and university research institutes will join in pooling their knowhow for development programmes leading toward a "fifth generation" computer.

The Ministry of International Trade and Industry (Miti) intends to invest approximately Y100bn (\$454m) into the project over the next 10 years with the goal of having the computer available by fiscal 1990.

ware to be designed by fiscal 1985, software in 1987 and work beginning thereafter on an experimental model so that a protutype will hapefully be ready in fiscal 1990.

There have been inquiries from some of the European countries such as the United Kingdom, France and West Germany. Some U.S. Government of the European Countries such as the United Kingdom, France and West Germany. ment agencies have also shown

The new "fifth generation" computer will have all new hardware and software archimunicating with buman beings. The Japanese future machine will be able to bear and talk and hava knowledge to solve

The machine probably will Josephson's Junction" circuits that operate now available, according to the

Finally. Japan's computer the next five years. .

The Council for Promotion of Information Processing reports its company image overseas by that computer utilisation exporting peripherals and small throughout Japan should double business machines first and to Y8.300bn or \$37.2bn in the moving eventually to the larger next five years in terms of installation costs.

This group, which advises the Ministry of International Tradeand Industry, said there were ao estimated Y4,091.3bn or \$18.59bn worth of computers in use in fiscal 1980. Installation costs were calculated in terms of computers for general use and all leased computers were

MARKET SHARE IN JAPAN Percentage values 1980 27.8 28.7 27.6 14.6 NEC-Toshiba (joint sales firm) 14.3 Source: Computable

Japanese component manufacturers are supplying parts for IBM's personal computer, shown left. The computer, which is assembled in Florida, can generate and display charts, graphs, text and numerical information

Strategies may differ among Japanese groups but the target remains the same

Search widens for export markets

JAPAN'S COMPUTER industry Interest in the Middle East five Hitachi cem computers doea not seem to bave a unified atrategy for exports. Instead each company professes to have its own policy dictated by its absolute zero temperatures and needs. It is certain that all the would be much more rapid companies are emphasising would be much more rapid companies are emphasising than the fastest semiconductors exports to the developing or neighbouring countries first.

Fujitsu and Hitachi, two of Finally. Japan's computer Japan's largest are concentratusage is expected to grow at a ing nn OEM (nriginal equipment 15.2 per cent rate annually over manufacture) or private label trade while Nippon Electric (NEC) believes in building up

models Mr Akiyoshi Kato, the vicepresident and general manager EDP (electronic data process overseas operations of ing) Fujitsu said that the OEM system is self-defeating in that it does not build up the company image over the long run.

At Fujitsu, Mr Naruto Michio, general manager for international operations, seems to think his company policy is the best. He cited growth in exports this year of 20-25 per cent to Y58bn (\$263.6m). Mr Mitsuhiro Saitob, manager

for Hitachi's computer planning growth. Mr Naruto projected exports of around 30 per cent for Fujitsu's eventual target monthly.

This is in view of the fact that the fastest growing sectors ara the developing countries such as Australia, South Korea, Taiwan, the Pollippines, Brazil and

Fujitsu has invested Y8.8bn or \$40m over the past 10 years at Woburn, Mass. where keyin building up their markets in

Fujitsu expects to have a 40 per cent annual growth to reach that Y58bn target. Hitachi hopes to increase exports by 60 per cent to Y26.5hn or \$120m while NEC plans for a 50 per cent growth to Y10.8bn or \$90m. Fujitsu sold \$70m worth to

the U.S. mainly through Amdahl in which they have a 32 per cent interest. Fujitsu also exported \$30m worth of products to Europe, primarily to Sicmens. The new deal with ICL is expected to spur future exports to Europe.

The remaining \$70m worth were shipped to 10 other countries including Spaln. Brazil, Taiwan, Singapore and South

In addition to the Amdahl agreement, Fujitsu has formed. venture with TRW Inc. in the U.S. The new company handles sales of small and medium scale computer systems as well as terminals for retail and banking

supply mainframes as well as provide early access to Fujitsu's sales of large mainframes advanced LSI chip and com- through National Advanced puter aided design technology. Fujitsu also has a licensing greement with Sociedad agreement with Espanola de Communicaciones e Informatia SA (SECOINSA) under which the Spanish company manufactures and markets its own small-scale computers, peripherats and terminals. NEC has sold 10 medium sized computers to China, They

computers by COCOM (Co ordination Committee for Ex port to Communist Areas). By far the higgest potential for NEC is in the neighbouring countries of South Korea and Taiwan. A joint venture has heen formed in Talwan, Central Computer Center Corp. Six

been ordered.
In South Korea, 20 mediumsized computers have been sold through NEC's arrangements with the Samsung group.

In Hong Knng, Argentina and Brazil, NEC has been selling their computers with success, in Brazil especially, periphorals and printers have to be local products. Assembly on a knockdown basis is in pro-

NEC has an arrangement with NEC Telecommunications Europe in London to handle sales all through Enrope. Peripherala and other equipment will be incorporated into their

Nippon Electric has a special

where they have set up an made. Hitachi only exports ACOS support centre in CPUs (central processing Baghdad where 20 technicians units); desk drives and tapes to are stationed to help service its oem partners while the their oil country clients. For partners take care of software tunately, IBM is not in countries like Iraq, Egypt and sells 10 per cent of its EDP Saudi Arabla.

NEC has a four-stage programme. First, sales to developed countries, second to Asian countries, third to the Middle East and finally to the Communist countries like China and the Soviet Union. The good thing about the oil countries is that they have money and all of their imports are outright purchases. However, there is some country risk.

HITACHI

Now selling 10 per cent of its EDP products in foreign markets. In five years' time exports, may reach 20 per cent

In the U.S., peripberals, spinwriters and SBCs (small business computers) are sold through the NEC Information Systems. An average of 2,500 apinwriter units are sold moothly while 50 SBCs are sold NEC American Incorporated,

mainly a communications com-

pany based in Melville, Mass., handles ACOS mainframes. NEC has already built 'a

made. It could be the basis for future manufacturing, if and when the day comes. NEC Information Systems did \$100m of business in fiscal 1981 and expects to reach \$500m in five years' time. Mr Kato feels that direct sales is the way to go. He believes that OEM sales are more costly in the long run. All the market growth means nothing because there is no company image.

Every country is different, ricing bas to be flexible, according to the NEC general manager for overseas opera-One of the main difficulties with IBM is that their pricing is the same worldwide.
In Japan, IBM is changing its
structure and becoming more apanese in its approach to the domestic market. They bave to keep their market share...

Mr Kato feels that the Japanese have caught up on horizontal package software but still have some way to go in vertical industrial software. The Japanese need more in the latest agreement with experience in this field like ICL of the UK, Fujitsu will IBM.

Hitachi concentrates on CEM through National Advanced Systems in the U.S. Olivetti in Italy and BASF in West Germany-which amount to 70 per cent of total EDP exports. NAS took three out of every

and maintenance. Hitachi how products in foreign markets In five years time exports are cent Small computers also account for 15 per cent of exports.

Toshiba also exports small business computers and peripherals Half of its export sales of \$34m will be in work stations, disc drives and other peripherals. sales for VSBC in fiscal 1981 are 3.000 units: --

Fujitsu bas also sold 16 medium computers to China. China is a potential market but is restricted under COCOM regulations.

Hitachi's proposed sale of a M-180 through the China Trade Council has been held regulations. It has been ordered for use in a Beijing university research laboratory. Mr Naruto decried reports

that Japan was nut to get IBM. IBM is our teacher. Without her we cannot survive. Obviously he bad reference to the fact that Fujitsu manufactures plug compatible equipment. He neted that IBM has 60 per cent of the world market compared to just 3 or 4 per cent for Japanese companies combined:

Mr Naruto also insisted that small manufacturing facility. He said that the Japanese are Japanese software is not weak good at figures and as a result excel in application software.

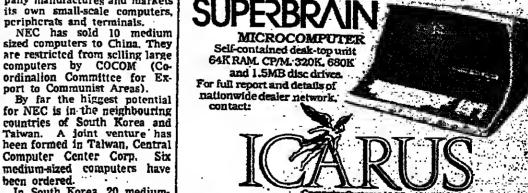
Tha Japanese merely have a different approach to soft-ware. We are not lacking in software," be insisted. The Japanese bave set up a

Software Industry Promotion Society with 127 regular and 30 associate members to promote the development of

NEC exports about 10 per cent of its data processing equipment amounting to about Y22 to 23bn in the fiscal year ending in March, 1982. The figures are on a FOB basis.
These figures suclude SBCs but not personal computers.
NEC aims for 50 per cent

growth in exports so that in five years time they expect to reach the Y100on figure. Although they are not yet selling their ACOS series overseas. NEC is doing very weak in and it in the series of the control of the Information Systems Australia to handle sales in that country. In Singapore, three years ago, they set up NEC Computers Singapore Pte to handle agles in Thailand, Malaysia, Singapore

pore and Indonesia. In Mexico. NEC Information Systems based in Lexington, Mass. handles two dealers through their Dallas office. Already they have sold 50 SBCs. Mr Naruto admitted that Mexico is IBM territory and difficult to

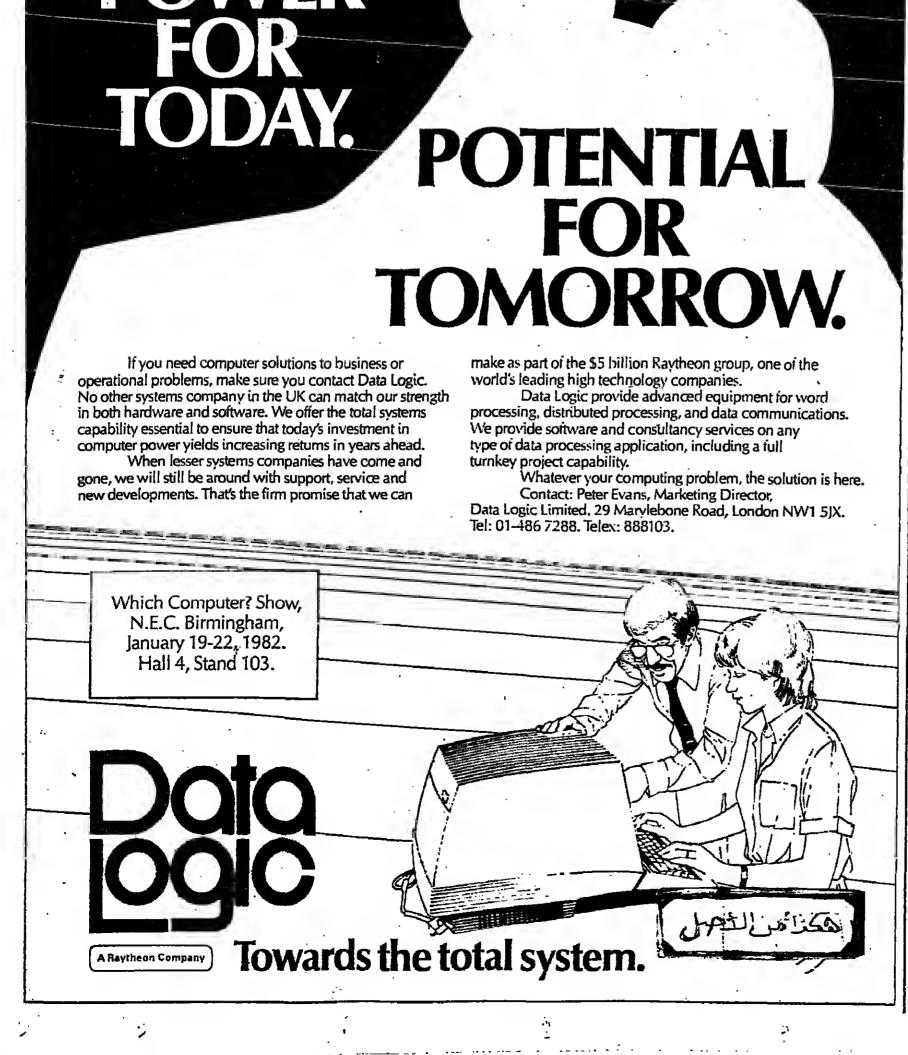


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Alan Cane examines areas where Japan is out to dispel the myth that it is a nation of refiners, rather than creators

Testing time for Japanese innovations

THE JAPANESE are out to sales administration, it also to talk to each other with a "In the age of distributed prove that in information tech- produces the world's largest and memory bus controller acting as data processing, and complex

They already build some of the best large commercial com-puters. Signess, ICL, Olivetti, BASF are smong the major European companies which have and modelling problems.

The M-382 is claimed to produce turners. Nasco, the mainframe of the IBM 3081, widely regarded as the first of IBM's conductor, one of the major new generation of big computer arm of the major new generation of big computers. It is said to have four semiconductor manufacturers in semiconductor manufacturers in semiconductor manufacturers. conductor, one of the major semiconductor manufacturers in the U.S., markets Hitachi mainframes in Europe and the U.S.

Their reputation is growing rapidly in the small computer field. National Panasonic, Sord, Nappon Electric and Matsushita all make well regarded microcomputers.

Companies such as National limits imposed by present fabri-Panasonie bave eased their techniques, machines into the European Fujitsu has not done this small systems market by agreements with suppliers able to provide proprietary software to run on the machines. National Panasonic, for example, first sold in the UK its machines equipped to run MicroCobol, a microcomputer version of the world's most used business language.

It is well recognised that the Japanese have been much slower to develop fine, reliable software than first rate hardware, but this is changing. Only a few weeks ago Mr David Fairbairn. director of the UK National Computing Centre warned that Western complacency over its software lead was misplaced.

The spur behind much of Japan's industrial effort, its as refiners rather than creators Ministry of International Trade hangs on, however. Mr Terry and Industry (MITI) is reported Pasola, managing director of to have agreed to provide Amdahl (UK), points out: "We Japanese computer manufacted do not think of them as turers with \$150m over the next three years to create new

operating systems software. These are the instructions which run the computer itself, as opposed to the applications software which carries out specific tasks such as accountancy or payroll.

Efficiency test

The efficiency of the operating software to a very large with 704 gates per chip."
extent determines the efficiency It was, in fact, Gene Amdahl
of the computer itself. Of who believed that air could be
Japan's three principal main-used to cool dense logic and Fujitsu. Hitachi and Nippon computed business believed that Electric, Fujitsu and Hitachi are computers would burn up if Electric, Fujitsu and Hitachi they were not water cooled. It was also Gene Amdahl who was one of the first to was one of the frame computer manufacturers,

will run IBM operating software. then very large-scale integrated With the aid of the MITI in circuits in his computers, vestment. Japanese companies Mr Pasola points to three perform significantly better

Fujitsu built the first Japanese computer back in 1954. Now there are some six Japanese companies. Fujitsu, Hitachi, NEC, Oki, Toshiba and Mitsubishi together with IBM (Japan) and Univac (Japan) selling significantly in the Japanese business computer market

ber of installed computers in chips.

Japan and according to Mr Y.

Kawatani, its general manager, which enables individual chips

specifically to solve scientific different computers all operat-

times the memory capacity (essential for speedy working), and three times the speed.

alone. The initial force behind the IBM ping compatible market was Amdahl Corporation, set up by Gene Amdahl, formerly a senior designer with IBM. Amdahi believed he could improve the performance of IBM-type machines using new technology and needed money

Fujitsu provided that money in exchange for a stake in the instruments and was until quite company and a share in recently primarily a communica-Amdahl's technological know- tions company.

Now Fujitsu and Amdabl collaborate in the generation of new technologies, while developing their computers quite

The old story of the Japanese innovators, rather as the most effective electronics manufacturer there is."

Their joint efforts bave produced higher speeds and higher density logic and memory chips. Mr Kawatani points out: "The M-382 is air-cooled rather than water-cooled; it uses 64K RAMS rather than 16K and emittercoupled logic devices with 1300 gates per chip compared .with transitor-transitor logic devices

memory chips when most of the

IBM plug compatible: was one of the first to use large-They are IBM look-silkes and scale integrated circuits and

aim to produce operating soft- areas where he believes Amdahl ware that is significantly better can stay ahead of Fujitsu than IBM's for computers that despite the fact that both comsame building blocks.

"First, there is microcode, computer instructions written into memory chips. Fujitsu we developed a seven nanosecond switching time random access memory chip." "In the 580, we have been able to put microcode on each

of the central processor unit Fujitsu has the largest num- controller boards using those

nology they are as good at fastest general-purpose main the system policeman originality as they are at frame, the FACOM M-382. "And finally we frame, the FACOM M-382.

"And finally we have decided advantage which most developed macrocode, to sit on of the foreign competitors, the enormously fast special top of the operating system and including IBM, Univac and Commachines such as the products which can give the impression trol Data do not enjoy."

of Cray Laboratories, huit that the 580 is a series of So: access to U.S. know-how

But Japan's great strength is in semiconductor manufacture. While most of the U.S. manufac-turers are having problems with

But now MITI is not find the most of the U.S. manufac-turers are having problems with How has this been accomplished? The M-382 is not access memories, Japanese conceptually a new kind of systems houses are using home computer, but it has taken congruence for the products.

And Japan can point to a limits impossed by present their growing string of impossations. growing string of innovation in (HEMT) for example, pioneered

and developed at Fujitsu, and the static induction transistor, invented by Jun-ichi Nishizawa of Tohuku University in 1950. And according to Mr Kawatani: "All six of Japan's computer makers are involved in communications,

Fujitsu, for example, started out in 1935 making telephone

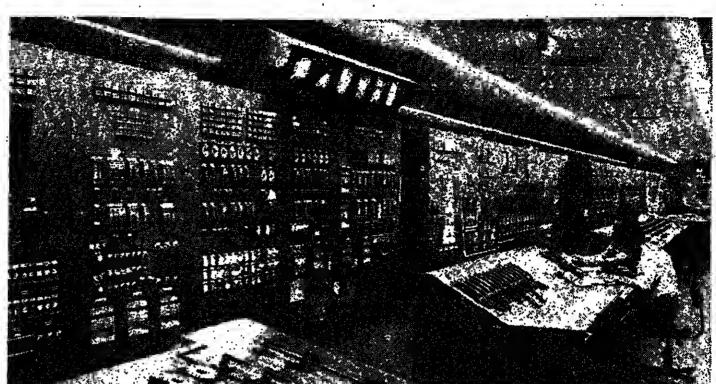
computer networks, this is a

(Nasco. works closely with different operating systems."

An entropy of the systems of the sy tion in the computer market. It fits well with the theory that the Japanese fight shy of leapfrogging current technology for

But now MITI is putting some \$400m over 10 years into a project to create the next generation of computers, machines that process more than one stream of data simultaneously that can store, assimilate and semiconductors—the high electroshuffle data in an intelligent transistor manner and which could come manner and which could come closer to the idea of an "elec-tronic brain" than anything

It would give Japan undis-puted world leadership in information technology if it proves successful. It is an indication of the confidence of the Japanese computer industry that it has said publicly it is going for such a goal. And it could be the test which will finally prove if the Japanese are innovators or copyists.



An example of how Japan uses computer power to maximise industrial efficiency at a steel-making plant: computers at the Ohgishlma works of NKK (Nippon Kokan) calculate energy use and recovery and are connected to the NKK Tokyo head office so that rapid instructions can be relayed from

22 miles away. Only 750 people are required on any shift at Obgisbima, and many of the workers are in control rooms filled with flickering computer screens, rather than the sound of metal and machinery. One man in a tower, for instance, operates computers controlling a hot strip mill that produces the world's widest steel coils.

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New product areas erode frontiers

CONTINUED FROM PAGE I

small business systems and tele- and industry has enabled Japan communications.

Very often traditional demarcation lines between different and, in some respects, to over-markets lines been eroded. In markets have been eroded. In the U.S. IBM, through its interest in Satellite Business Systems, is challenging the tra-ditional territory of American relephone and Telegraph, which in turn is poised to enter the office automation field. Both will compete there against Xerox, which withdrew from mainframe computers a decade ago but has re-emerged as a supplier of advanced integrated office systems.

The battle for these new markets is being waged not only at the level of companies, but trialized countries now view computer and electronic technology as a priority resource and encourage its development through support schemes rang-ing from subsidies through preferential Government procure

ment to protectionism. attracted keener attention, both ing it. As the near-collapse of for the boldness of its objectives and its success in fulfilling year, the penalties for those them, than that of Japan. In less than a decade, a carefully be heavy. The computer co-ordinated programme of colindustry may be full of promise, laboration between Government but it is also unforgiving.

leaders in computer technology

Japan's self-confidence can be measured by the ambitious scope of its widely-publicised project to develop a "fifth generation" of computers, well in advance of any currently-contemplated in the U.S. histy advanced technology. new architecture and immensely sophisticated software, machines would aspects of human behaviour and would be endowed with the power to interpret and reproduce speech and, within limits,

to reason. One of the leaders of the fifth generation research team has compared the project to the space shuttle, in terms of the advances which could result for human knowledge.

The analogy is, perhaps un-intentionally, art. For it under-lines both the unge potential offered by computer technology. No national strategy bas and the risks involved in exploit-ICL demonstrated earlier this who misjudge the market can

Tandem Computers Ltd, Peel House, 32-34 Church Road, Northolt, Middlesex UB5 5AB Tel: 01-841-7381 Also at Bilbao House, 36/38 New Broad Street, London EC2 and 54 Hagley Road, Edgbaston, Birmingham Tandem and NonStop are trademarks of Tandem Computers Inc.

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an unknown technology that

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COMPUTERS IV

Louise Kehoe in California charts U.S. reaction to Japan's assault on world markets

Two giants in battle for supremacy

WE ARE at war with Japannet the kind of war with guns and bombs but an economic and bombs—out an economic war, and we've got a big uphill battle to fight." That is how Charles E. Sporck, president of National Semiconductor, characterises the competit an between the U.S. and Japan in

The stated intention of the Japanese to become a major force in computers is but one aspect of their desire to domi-nate electronics in every field; from consumer items, through computers and telecommunications. The mainframe computer market is the current goal, but along the way, the Japanese have targeted first the consumer electronics market, and now the conductor chip marke The Japanese have already won the lion's share of the

vorid-wide market in consumer

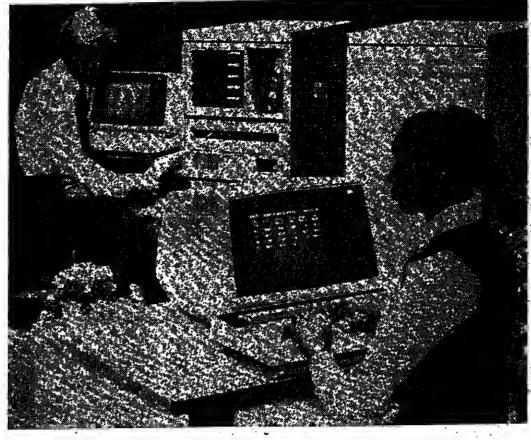
tereo, calculators,

In.

electronic

toys, and digital watches-Japanese menufacturers lead the market. In the latest round of this fight, most of the U.S. and European manufacturers of calculators and digital watches market by low Japanese prices which they could not meet while meintaining profitability. The Japanese tactics are straightforward. They target a particular market segment, use their excellent manofactur-ing skills to produce a good quality product, and then cut prices to buy market share. U.S. and European manufacturers (of cars, cameras and televisions) have called this approach "unfair." They talk about "predatory pricing" and dumping," and some call for government intervention to prevent excessive Japanese imports
—but these are reactions
that occur after the home industry has already lost a major share of its market. In semiconductors and computers, most U.S. industry representatives believe in a free marketbut they look to Japan to open its doors to U.S. and European products before they will withdraw the threat of protectionist measures in the U.S.

The war in the semiconductor arena is still raging. U.S. electronics companies have been horrified over the past year, by the Japanese takeover of the key market for memory devices. Japanese manufacturers now supply 70 per cent of all 64K RAMs. These are the chips used to build computer memory



Japanese companies are using joint ventures to gain access to the U.S. market. Above is a small general purpose information system sold in the U.S. by TRW-Fujitsu, a U.S./Japanese link-up

For the U.S. semiconductor industry this is little short of Although suppliers may recover some of the market in 1982, they can never expect to win a dominant Without experience in building 64K RAMs, they may not be able to maintain their technology lead in other types of devices such as microocesors. And almost certainly, apan will also dominate the next generation of memory devices—256K RAMs.

Aiready, three Japanese com-panies have announced that they have sample quantities of 256K RAMs. While some U.S. companies are believed to be working on the 256, the very real fear now is that the Japanese have moved ahead in miconductor technology.

But U.S. chip makers are fighting back. Individual com-panies have begun highly successful quality improvement programs, and productivity programs designed to make them more competitive. Many volved in joint development

between two or more parties. The most significant such agreement is that between Advanced Micro Devices Advanced and Intel, which covers a wide range of products. Another recent development has been the creation of an industry supported research co-operative to fund long term research at US

While U.S. computer makers are uneasy about Japan's threat to the U.S. semiconductor industry, it has not stopped them from taking advantage of the low prices being offered by Japanese suppliers. Even the semiconductor companies themselves will buy Japanese parts to make systems products if the price is right.
Reflecting the concern of

any U.S. computer makers, Hewlett Packard has published some details of its huying patterns in memory chips. The computer and instrument manu-

costs of a new family of devices maker, will continue to buy huge quantities of Japanese memory chips.

> For the U.S. computer industry, the failure of the U.S. semi-conductor manufacturers to supply the needed 64K RAMs means that they must rely upon their potential competitors for these parts since Japanese semiconductor makers also build computers. For example, a U.S. computer maker buying memory chins from Hitachi is also dealing with the manufacturer of large IBM type computer In the back of the minds of U.S. computer makers must be the question of what would happen if the Japanese company chose to cut off (or

The Japanese challenge in computers has started at the bottom of the market with lowpersonal computers. Although few Japanese made facturer reported last week that U.S. or Europe, they are no U.S. supplier has yet met its expected to become a major

down) supply of a key part.

can expect to see severe price competition in their market in the coming months.

When Japanese personal combuilt in the U.S., there will however, be some remarkable similarities. Already many parts of the systems are actually supplied by Japanese manufacthrers, and then merely reabelied by the U.S. systems

made in Japan" is beginning to appear on an ever-increasing percentage of printers, video Japanese companie supply the peripherals for most IBM, once the leader in printer technology, now buys printers

receive their challenge from the Japanese however they can be sure that it is not . Aiready IBM has been ousted as the top supplier computers in the Japane market Japanese maintre computer makers are building up their strength for an eli-out seault on the U.S. and Euro pean markets, industry analysis beilieve

Some Japanese built mair frame computers are already for sale in the U.S., but they not carry the names of ne Japanese manuacurer. National Advanced Systems, a plug - compatible manufacturer s Hitachi-buitt computers a

well as its own. Ironically, NAS is a sub-sidiary of National Semiconducfor whose president is so outspoken on the subject of Japanese competition. While one part of National may be at war, another, it would seem, is fraternising with the enemy.
NAS's involvement with

Japanese supplier is by no means unique. TRW Inc. has gone even further by forming a joint venture company with Fujitsu to market the Japanese company's computers in the U.S. So far the company is selling small business systems and desktop computers. Later it may be expected to add Fujitsu's mainframe computers to its product line.

Japanese involvement in the maintrame computer market is widely expected to follow the systems have so far reached the pattern of the TRW-Fujitsu arrangement, with the native company supplying the marketspecification requirements for force in this market over the ing and support services that 64K RAMs, although it expects next three years. "The are essential for large computer 64K RAMs, akhough it expects next three years. "The are essential for large computer one U.S. company to do so soon. Japanese are coming" is an systems, and the Japanese comprogrammes which spread the Until then, Hewlett Packard, immediate threat to companies pany being responsible enormous product development like every other U.S. computer such as Tandy and Apple which, manufacturing

ine new

1982 is Information Technology Year. It's a special year too, for ICL. A year of important new marketing strategies.

New Networked Product Strategy ICL is offering its new Networked Product Line which will meet the growing needs of distributed processing and office automation in world markets.

New approach to small system selling New ICL Computer Point demonstration centres will offer the small business community easier access to ICL's powerful, small computer systems with a wide range of application solutions, to meet businesses' real needs.

New attitudes to third parties ICL is introducing new commercial

initiatives, under the banner Trader Point, to encourage distributors, software and systems houses to sell ICL small computers, like the DRS 20, which starts at a simple workstation, and can grow into a fully networked system.

New collaborations

New collaborations are taking ICL into engineering productivity with PERQ, personal computing with Rair, very powerful mainframes with Fujitsu, electronic private telephone exchanges with Mitel, and 'One per desk' workstations with Sinclair.

New force in information technology With its new products and strategies, ICL enters 1982 positioned to be a world leader in information technology.



Vector processors bring fresh dimensions of power

Big computers are still thriving, as Alan Cane outlines below

SOME HAVE labelled the big computing. seen in other sectors of the comnumbers—to operate at their
puter business, but hecause,
until fairly recently, mainframes
were the only computers availwork, some time sharing, a lot able, that is hardly surprising.

The reasons are embedded in the way computing underlies virtually every aspect of business life, and in the fact that once customers have tasted computer power, they always come back for more.

Those companies at present using minicomputers will want eventually to trade up to mainframes; those already using mainframes want faster and more cost-effective machines. Against that background, it

is easy to see why all the major manufacturers continue to put substantial resources into their big machine research effort; why ICL, in particular, puts so much emphasis on big machine technology at the expense of minis and micros.

These days, of course, defining a big computer is difficult when a respectable mini can out-

At the very top of the tree, the supercomputers are in a class of their own. These vector processors—so called because of their ability to operate on very large arrays of data—are monuments to raw pipelined in the 205 which computing power.

Instructions and data are pipelined in the 205 which means that before one operation

tions a second (floating point operations are simply a measure

computer the dinosaur of data

These are dedicated, perputer at its "front end" as its early implementations were processing, yet the market for big mainframes is increasing. It is not showing the rapid growth lems—ones involving very hig in comparison with the municipal computer programs, put the dinosaur of data

These are dedicated, perputer at its "front end" as its early implementations were have a manager.

All this may seem very exotic are now hoping it will settle in comparison with the municipal computer programs, put the computer programs, put the computer programs, put the computer programs, put the computer programs, its early implementations were have a manager.

of file handling, they could be beaten hands down by a con-ventional large mainfrome. But given long strings of numbers to chomp, vectors of more than 20 characters in length, they get faster and faster as the calculation goes on. Supercomputers like the

Cray or the Cyber, conventional business machines like the IBM 370/168, even pocket calculators, all compute in exactly the same way. Computational methods have

not changed much since the early days of computers. What has improved the speed of computation is the development of processors and memories on silicon chips together with a number of bright ideas to speed the progress of data through the machine.

ing a big computer is difficult when a respectable mini can outperform a sizeable mainframe of only a few years ago.

Monuments

At the very top of the tree, machine speed—by comparison a good minicomputer might have a clock cycle of 600 billionth of a second).

The fastest number-cruncher is completed, another has in the world, the Control Data already started, so that a whole Corporation Cyber 205, runs at up to 800m floating point operation the pipeline."

Such a rate of computation operations are simply a measure of pure computing speed; in the processing millions of instructions per second (MIPS) are also quoted but these figures invariably include some housekeeping instructions—that is, not of direct use to the user).

Before the Cyber 205 was built, the fastest commercially available machine was the Cray I, built by Seymour Cray, formerly chief designer for Control Data. He is now huilding the Cray II which should ing the Cray II which should set new benchmarks for super—Meteorological Centre, Brack—Meteorological Centre, Brack—Meteorological Centre, Brack—Meteorological Centre, Brack—

response times (two seconds or two, flow through the system tends of two fieldslity and ease of until they meet up and are response times (two seconds or two, flow through the system tends of the system to unit they meet up and are modification in systems where processed. It is one approach to the difficult task of development to the mainframe.

ICL has developed for its more than one series of calculations at once, parallel process—a modular design for both harding—ware and software, aimed at instructions at once, parallel process—a modular design for both harding—ware and software, aimed at instructions at once, parallel process—a modular design for both harding—ware and software, aimed at instructions at once, parallel process—a modular design for both harding—ware and software, aimed at instructions the systems which can carry out both vector and conventional (scalar) processing. It is dedicated entirely to number crunching and terminals are to the difficult task of development to the mainframe.

ICL has developed for its more than one series of calculations are developed for its more than one series of calculations are developed for its more than one series of calculations are developed for its more than one series of calculations are developed for its more than one series of calculations are developed for its more than one series of calculations.

ICL has developed for its more than one series of requires data and instructions

All this may seem very exotic in comparison with the mundane work asked of most business data processing machines, but David Barkai points out that vector processors are well suited to processing strings of numbers in, for example, payroll or inventory applications. When conventional comparing technology has been pushed to technology has been pushed to the limit, vector processing may be utilised to provide more pro-

cessing power. What kind of conventional big computer architectures are manufacturers offering at present? The short answer is that the hardware—the computers themselves— have become almost unimportant.

Performance

All the mainframe manufac-All the mainframe manufac-turers—Amdah!, Burroughs, Honeywell, IBM, ICL, NCR, Univac and the Japanese Fujitsu, Nippon Electric and Hitachi—offer large computers which perform soundly and reliably. Customers might go to particular manufacturers for certain features—to Univace for certain features—to Univac, for example for networking capability or to Honeywell's Multics system for security, but what has become critical is the performance of the operating system, the software which controls the functions of the computer itself. computer itself.

IBM, for example, is keen to see its big machine users move to an operating system it calls. MVS (multiple virtual storage).
designed to "increase the
integrity data security, high
availability and performance of

nell It has a large IBM com- these large computer programs,

Burroughs with its Master Control Program (MCP), Honey-well with GCOS, Univac with 1100 OS and NCR with VRX, all have mature operating systems with well-established char-acteristics.

Perhaps the most popular-method for increasing machine

method for increasing machine performance is to use more

than one processing unitthing that has only become economic since the development of the microprocessor. The chief reasons for using multiprocessor systems are to increase throughput—statistically it is more effective to run. a number of jobs on a multiprocessor system than to divide them between a number of uniprocessors and because of the inherent robustness in a system where the important elements are at least duplicated.

For the future, multiprocessors will be used as the basis of what has became known as "data flow" computers.

This is still chiefly a resserch concept, but it is exciting interest in Japan, in the U.S. and in this country. A data flow machine is in the wall grows. machine is in the final stages of completion at Manchester University (which has fair-claim to be called the cradle of British computing).

The simplest way of describing data flow architecture is to consider each number to be computed as having a tag integrity data security, high number in the calculation and availability and performance of the arithmetical operation to be the system."

It is intended to provide good is similarly labelled, and the response times (two seconds or two, flow through the system less), reliability and ease of until they meet up and are modification in systems where processed. It is one approach several thousand terminals are to the difficult task of developed attached to the mainframe. Ing systems which can carry out attached describing the other

The new ICL. Leaders in information technology.

Alan Cane examines moves by IBM, the world's largest computer company, to take advantage of rapid technology changes.

Colossus faces changes on an unprecedented scale

WITH A PRESCIENCE perhaps data processing tasks as well as points strongly to a future marketing methods traditionally greater than he knew. Mr office automation activities, the where IBM becomes one of the used for large computers with dominant suppliers of computer high sales margins simply can bublished lafe-last year, about and GSD became blurred. Services — to the world. the world's largest computer

revenues for the third quarter last year reached \$6.72bn, even if earnings tell 22 per cent to \$693m, shaking the analysis. That it is in transition is also not in doubt and on a scale probably usprecedented since the earliest days of the com-

In October last year, it sur-prised the entire computer world by announcing a major

corporate reorganisation.

It amnounced that all its U.S. marketing and servicing divisions were to be combined into one group and its development

and manufacturing divisions into two other groups.

At the turn of the year it announced similar plans for the UK. The message is simple; a newly-formed Information Systems Group will market all the companies product line, instead of three groups each with its own style of products.

These were the Data Process-



Mr. John Opel, IBM's president, has said that the company's restructuring would enable IBM to take advantage of rapid changes in technology and to co-ordinate long-range planning

ing Division which tended to cater for large systems users, the General Systems Division which catered for the smaller computer user and Office Products Division catering for appreciate the value of the users of everything from type market for these home ter-writers to word processors minals; anymore than it can

sharpen competition within the company and, some would say, to belp the company in its antitrust suit with the Justice De-

partment.
But while that long-drawn out saga has played to completion the data-processing world has been changing so much that IBM, which traditionally and almost of right has held over 60 per cent of the world sales of computers, found itself with only 40 per cent of the West European market last year, according to a survey by the London-based consultancy,

Logica.

The principal change is the new emphasis on smaller, more cost effective, computers: Large machines are becoming smaller; small machines are becoming more powerful. Tasks which traditionally would have been the exclusive preserve of Data Processing Division (DPD) with its array of hig machines, can now be handled by the offerings from General Systems Division (GSD). And as word processors grow more facilities and take on

the words systems company and office systems company business by two or even three marketing divisions.

(Times: Beoks: 360 pages, three marketing divisions.

It produced confusion and trritation for the customers and trritation for the customers for IBM. The result was an often un-seemly scramble for the same

· Mr John Opel, IBM's president said that the restructuring would enable the company to take advantage of rapid changes

in technology and to co-ordinate long-range planning.

The reorganisation came at the end of a year which bad seen a remarkable spate of announcements from a comment. ments from a company which is traditionally shy of publicity and which refuses steadfastly to whet market appetites by speculating on future product releases.

One of the most significant announcements was the introduction of a microcomputersimply called the IBM Personal Computer — designed for the home market.

There are at least three important consequences of this

• IBM has at last given its blessing to one of the fastest growing sectors of the computer market. Pioneered by companies such as Tandy, Apple and Com-modore, the personal computer market had overtones of the hebbytts and the electronic hobbyist and the electronics enthusiast. As IBM does not cater for these categories of buyer, its introduction of a personal machine gave the market respectability and suggested IBM could see a broader future

 That its future probably lies in home information and entertainment systems.

A hattle is already developing between those companies who believe that information is best brought into the home electronically hy viewdata tech-nology (a combination of domestic television and telephone) and these who believe that the home computer terminal is the hest bet.

Both approaches are under investigation, but in the U.S. the halance seems tipped towards the home computer. Citibank, for example, has launched its home banking experiment around a computer terminal it designed and built itself. Chemical Bank is using a modified Atari 400, a home computer designed for television video games.

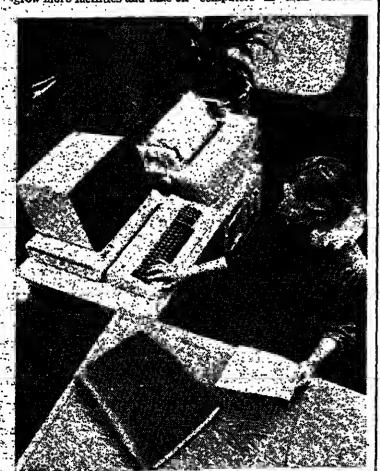
IBM cannot have failed to IBM originally set up its fail to have appreciated how run the databanks on which the service will depend.

Significantly, IBM is hig in banking everywhere and one role for the banks in home information will be to act as a central "switch" to information provided on other com-panies databases.

"Personal" computing for IBM has in the past meant computing for the individual professional—a terminal on the desk and a powerful programming language like APL giving the husiness executive access to the power of its big computers.

IBM is, of course, back in the bureau business in the U.S. (it was legally debarred from offering bureau services for some years after an antitrust suit with Control Data) and its first satellite (it owns a third of Satellite Business Systems) has heen successfully launched.

The combination of IBM's bureau coupled with datacommunications SBS and sales of personal computers- in their thousands



The data-processing sector has been changing so much that IBM, which for long had held more than 60 per cent of the world sales of computers, found itself with only 40 per cent of the West European

market last year, according to a survey by the London-based consultancy, Logica.

Above: IBM's series one 4952 processor, model C, which provides 32KB basic storage; one built-in dishefts the consultance of the consultance diskette drive and four 1/0 channel positions, maximum storage of up to 128KB and a second diskette drive are optional.

Last year, the company also adopted the unusual marketing tactic of buying space at

The company surprised the entire computer world in October last year by announcing a major corporate reorganisation.

branches of Chase Manhattan Bank in New York to sell to customers: "who might not otherwise be reached by our traditional marketing methods."

The company already has its own retail stores and has begun to authorise a select group of non-IBM retailers to handle its smaller and lower priced products. Sears Roebuck, for example, and Computerland are selling the Personal Computer. The bank selling points are expected to sell typewriter

ribbons as well as typewriters and the personal machine. It is all evidence that IBM understands very well that the

fit products.

Office automation brings together all three divisions of the old-style IBM organisation, IBM is looking to sell its version of the office of the future in the first place to large companies with heavy text processing and file handling requirements.

The architecture it proposes is a central mainframe to control the system linked directly to a centralised database.

Text processing and manipulation is to be handled by the Displaywriter, IBM's low cost word processor, by the \$100 System, its distributed computing offering, and by the 5520 business administration system. Eventually all of these will be

able to communicate with each other and with a mainframe. Text bandling will be expedited hy a piece of software called DISOSS. Some of these plans are already implemented; IBM is committed to completing the pattern within three years.

Selling such a system would have cut across all the old boundaries; IBM's new marketing approach looks much more solike and aggressive. No part of the computer world can afford complacency when the giant of Armonk is roused



THE principal change now being seen in the West European computer market is the demand for smaller, effective equipment. Large machines are becoming smaller; small machines are becoming more powerful.

Left: IBM's recentlyannounced System 23, a small business system its components include the IBM 5322 computer workstation, integrated diskette capability, 1,920character CRT display, additional diskette storcommunication age, features, additional printer attachment and the interpretive langage,

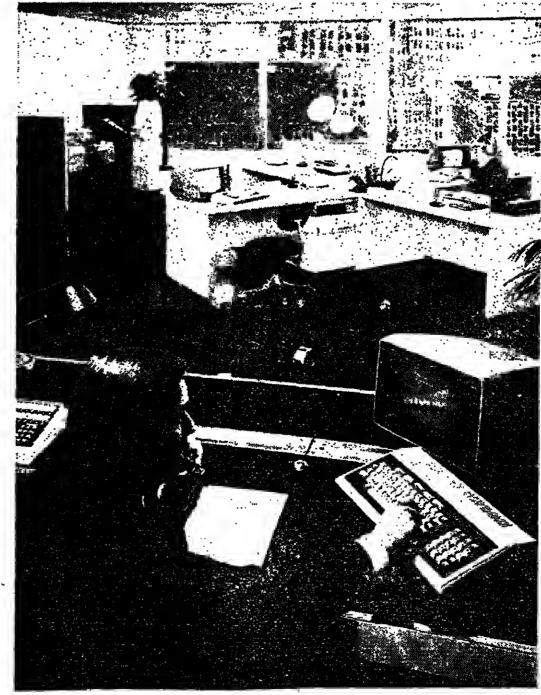
The new 5246 diskette unit contains up to two drives of 1.1 megabytes of storage each for a total capacity of 2.2 megabytes.

Models 021 and 022 can be attached to two 5322 computer workstations for file sharing.



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NEC has earned the trust of customers the world over.



Louise Kehoe analyses the new breed now holding 20 per cent of the demand for general purpose central computer systems

It pays to be compatible in a \$43bn market

frame manufacturers (PCMs) are a relatively new breed. It is only six years since Amdahl Corporation installed its first IBM-compatible mainframe computer system, but already PCMs are estimated to hold close on 20 per cent of the market for general purpose central computer systems, currently esti-mated to be worth \$43.40n.

Plug-compatible manufacturers sell equipment that can either run alongsido IBM systems or replace computers built by the "bluegiant." Plugcompatibles are typically defined as mainframe computers that can directly execute all applications programs and systems software written for the IBM System /370, 303X Series, or 4300 Series com-

The driving force behind the IBM-compatible market is the more than \$300bn in existing IBM 370 user software estimated to be in place. Users want to protect their investment in software when they upgrade to a new system. This would normally the them to IBM but now the PCMs offer an alternative. They attempt to compete with IBM by offering either faster delivery, lower cost or higher performance, while maintaining that all-important software compatibility.

Sales of IBM-compatible peri-

patible peripherals designed to tape units, disc storage units and printers has been a major factor in the emergence of the plug-compatible central pro-cessor market, by opening users' minds to the possibility of using non-IBM equipment alongside their systems.

Market leader

Several U.S. manufacturers, most of them based on the West Coast, heve targeted the plug-compatible market. The principal players in the market include Amdahl, which has concentrated on the high-end market segment with very high performance systems; Netional Advanced Systems, which matches its products to the middle range of IBM systems; Magnuson and Four Phese (recently acquired by Moto-rola) which both compete in the low-end portion of the market.

with the highest dollar value of PCMs have been slightly helped installed systems but in terms by the recession because huyers of the number of systems are more cost-conscious, installed National Advanced users are deleying their Systems claims to top the list. chasing decisions so ahipments According to industry sources, have not been as high as ex-National has approximately 700

compatible machines has a non-IBM central processing unit," explains Mr Floyd Kvamme, president of NAS. "Close to 80 drama computers in the world operate in the IBM environ-ment," Kvamme estimates. Users have come to appreciate compatible vendors forces IBM to hold down prices and Improve performance," he

But the effort of keeping up with IBM's every move— whether a price cut or a new system introduction has taken its toll among the PCMa in the past and many users have been whose manufacturers may not be around to support them in the years to come. Today the PCMs are looking healthier, although like all computer vendors they are feeling tho effects of the oconomic reces-

"The market is relatively users are deleying their purhavo not been as high as ox-pected," he adds. NAS, which

EVOLUTION

OR OBSOLESCENCE?

in every seven or eight IBM Francisco-based Itel Corporation, to which it had formerly supplied computer systems.

NAS's current product line includes systems whose per-formance spans the 0.8m instructions per second (MIPS) to 15 MIPS range. Approximate IBM equivalent systems rango from the 4341 through 3033 sys-tems up to the 308X Series. National will augment its product line with a new systom to be introduced within the next few months and aimed at the middle range of the IBM 370 systems performance cap-ability.

Japanese ties

NAS manufactures its medium-level systems at its San Diogo fectory but it buys in the higher performance systems from Hitachi in Japan. According to Kvamme, the Hitachi machines are converted to compatibility with IBM soft-ware by Netional. The Jape-nese systems account for about half of NAS's installed base.

'Amdahl Corporation also has ties with the Japenese. The company is one third owned by Fujitsu. Amdehl has concentrated on very high performance machines, some of which outperform IBM's top range installed systems as compared is a subsidiary of National systems. The company uses to Amdahl's 570 and Magnuson's Semiconductor, was formed in some innovative air-cooled cir-

What this means is that one the computer division of San conjunction with Fujitsu and plug-compatible manufacturers to become a \$9200 market; every seven or eight IBM Francisco-based Itel Corporawhich the Japanese manufac- are expanding their share of

to be benefiting from their relationships with Japanese companies. In the long term, however, some analysts see a danger in U.S./Japanese joint developments of this kind, sug-gesting that they are merely a part of the Japanese strategy to -and eventually dominate —the U.S. mainframe computer market. Already both Hitachi and Fujitsu are selling IBM plug-compatible systems in Japan and many industry watchers think that it will not be long before they enter the U.S. market in their own

At NAS, Kvamme says that he is aware of the possibility that Hitachi may decide to market its systems directly in have talked to them about it. he says. When and if it does ment" with Hitachi, although however, is that the Japanese computer makers aim to expand their share of the mainframe computer market. When they do, all U.S. manufacturers, including the PCMs, will have to

the mainframe market. Accord-Both NAS and Amdahl appear ing to IDC predictions, the plugcompatible share of the market will grow to 24 per cent by 1985, at a compound annual growth rate of 25 per cent. While the PCMs are expanding it is the non-IBM compatible systems manufacturers who are losing market share, according to IDC. Burroughs, NCR and other non-IBM manufacturers had an 18.5 per cent share of the market in 1979. By 1986

recently specialised in peri-pheral devices, has stated its competible central proces unit Late last year the com-pany acquired Magnuson (the company founded by Gene Amdahi's son, Caril, thus buying into the market. This fellowed an unsuccessful attempt to acquire Amdaid, which was

founder of Amdahi Computers Trilogy is expected to introduc a high performance system the

-benefits the entry of one of ness. Four Phase specialises i but its Two Pi division



A powerful and flexible small business system, the AM Jacquard J100 video computer, is a fully expandable, multi-user system which carries out simultaneous data and word processing with communication. The equipment is manufactured in New Jersey; J100 systems in Britain range from £14,500

Paul Betts examines the outlook for important

Tough times ahead for IBM competitors

mainframe computer manufacturers

DESPITE the worldwide puter industry is still a major growth business," said Mr Joseph Kroger, president of Sperry Univac (the computer arm of the Sperry Corporation), in his recent year-end business statement and 1982

The statement may, at first glance, seem banal—but for one word. Mr Kroger, whose company ranks as one of the largest main frame computer manufacturers after IBM, suggests that the industry is still a major growth busine A couple of years ago, the word "still" would never have featured in such an address. It was generally taken for granted that computers were a major growth industry and would remain so for years to

Difficulties

But judging from the stock market and earnings' per-formance of the major U.S. computer manufacturers, 1981 will be remembered as the year when Wall Street started to have serious misgivings about the growth prespects of the large computer com-panies. The outlook for 1982, least in the opinion of the Wall Street electronics indus-try analysts, will be another difficult year for the business. Mr Sanford Garrett, an analyst with the Wall Street investment house of Paine Webber Mitchell Hutchins, says that all the large non-IBM computer manufacturers will continue to face difficulties as a result of the uncertain and gloomy outlook of the U.S. economy as well as those of other industrialised countries.

Moreover, ali large main frame computer companies have been suffering from the effects of the strong dollar and currency translations which have depressed and distorted earnings. Even with the recently announced changes in the financial accounting standards board's FAS-52 accounting rule, these companies will continuo to suffer from the negative Impact of currency trans-lations and the dollar in the year which has just begun,

If 1981 was a year when the computer industry lost much of its glitter among investors, it was also a year when the principal IBM competitors took stock of the changing character of the traditional computer / business and market. "Each week comin the industry petition becomes fiercer not only in the United States but in all the international markets, says Mr Kroger. "The tradi-

evolving into the broader as where the differences between data processing and commani-cations is continually becoming harder to distinguish." He adds that although his com-pany expects the value of all computers installed worldwide to increase from \$136bn in December 1981 to \$217bn in 1986 (or a compound growth rate of almost 10 per cent annually), "The future in the computer industry belongs to those companies which are forward looking, trim and

aggressive." The change or rather evolution in the computer market has led to a scramble of major company reorganisations and new strategic planning. In a sense, Mr Garrett of Paino Webber suggests, the reorganisations which are being undertaken by most leading main frame manufac-turers—from Sperry Univac to Honeywell and most important of all at Burroughs-follow the lead which IBM has been setting in reorganis-ing itself in the face of a

ing itself in the face of a changing market.

The IBM moves only surfaced last year but they have been in the makings for a considerable time. With IBM sharpening its focus on the market, placing the emphasis on customer relation, becoming to all accounts far more market sensitive than it ever has been in recent than it ever has been in recent years, the computer glant has signalled its intention of seeking to maintain its dominant position in the computer market. "The rest of the pack could hardly stand still," one Wall Street analyst remarked. In the case of Sperry Univac, the computer division of Sperry embarked on a major restructuring early last year. "To date," Mr Kroger explained, "we have centralised and consolidated a men and consumates a minher of overlapping func-tions throughout our organisa-tion and have shortened the lines of communication." He adds that more significantly. Sperry Univac is changing the way it does business and improving service to cur-

But for Sperry this year will be tough for a number of specific reasons. Its farm equipment subsidiary is suffering from a poor farm cycle, its Vickers division, which makes hydraulic and fluid power systems, is expected to be sold, and Sperry Univac is in the middle of a product cyclo with ne middle of a product cyclo with no major new product expected duct expected to be aunounced until 1983.

At Honeywell, too, there has been considerable reorganisation during the post 18 months including as from this month the consolidation

cycle. But perhaps the biggest uncertainty of all concerns Honeywell's 47 per cent stake in Cli-Honeywell Ball, the French loss-making main frame computer manufacturer. Honeywell is negotiating the sale of a substantial slice of its interest in the French company as a result of the impending nationalisation of Saint Gobain, the French company which controls the French computer maker. But until the Cil-Honeywell Bull issue is eventually resolved, the uncertainty is likely to

Holding up

Control Data has held up better than most. This in part resition in the per also sensitive to the general economy and could suffer in the first half of the year. Mr Garrett sees little economic

corporate reorganisation to seeking to improve Barroughs' customer service and make up for all the ground the company lost during the past five years or so. He also took the market place by surprise at the end of last year when he agreed to take over Memorer, the financially-troubled data storage equipment manufac-turer. Although in the short run, the acquisition could hart carnings, in the longer term the takeover could well Euroughs

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dodo wasn't able to grasp was planning for tomorrow, today. With computer technology

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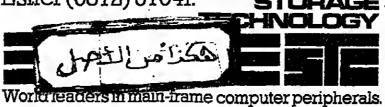
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DATA GENERAL

UNTIL THE LATE 1970s Data

General used to revel in its

reputation as the roughest and

loughest company in the mini-

computer business. It could

afford to as it bad a startingly

fast growth rate and exceptional

profit margins, notably better

than Digital Equipment the in-

Until the middle of fiscal 1979, Data General's pre-tax

noargins were about 20 per cent, but by 1981 these had been more

than halved. Sales growth fell

nearly 50 per cent io 1976 to 13 per cent in 1981. Profits in

1981 fell to \$40.9m from \$54.7m

There were a number of

reasoos given for its fall, The

company pointed to the weak-

ness of the minicomputer market and exchange losses. In

addition it faced a number of

other problems including too

slowness in introduciog a 32-bit minicomputer (it was about

three years behind DEC), costly litigation and an overdepend-ance on selling to original equip-

ment manufacturers (OEMs).

There has been significant

reorganisation of the company

which has been split into three

divisions, one selling computers

to large companies and for scientific applications, another

to small businesses and a third

to OEMs. There have been a

number of management changes

Before the reorganisation Mr

Edson de Castro, the founder who had designed the PDP 8

minicomputer at DEC, was criticised for taking all the

decisions. The company's 32-blt

minicomputer is selling well,

although in much smaller

numbers than DEC's. It has alsn

now gone out of its way to live

down its rough tough image

and pay greater attention to

customer satisfaction.

and decentralisation.

decision-making.

Changing

its tough

image

dustry leader.

the previous year.

centralised

HEWLETT-PACKARD

Strong computer growth

HEWLETT PACKARD is the second largest manufacturer of minicomputers, after DEC. Originally, Hewlett-Packard's main business was in electronie testing and measurement in which it is still a major force in the world.

Hewlett-Packard first began making computers in the mid-1960s when it found that its electronic instruments were becoming so fast they could no longer be read by a human operator. A computer was developed to read and analyse the rapidly-produced

Today, the computer husiness has outgrown its test and measurement division. Computers account for 49 per cent of sales, test and measurement 38 per cent. medical products 8 per cent and analytical instruments 5 per cent.

For the first ten years, Hewlett-Packard concentrated on producing minicomputers for strictly technical use. But in the mid-1970s it developed a business computer.

The HP 300 series are the company's higgest computers and used in general business applications, and are its best selling. Hewlett-Packard has not yet introduced a 32-bit computer to compete with those of companies like DEC. Data General and Prime although it is expected to do. so sometime this year.

One of Hewlett-Packard's main strategies is to become a major supplier to manufacturing companies where it hopes to sell companies an extensive range of all its products from control of equipment on the shopfloor to financial information, on the largest systems.

It has just opened its first software development division in the world in Britain.

> SALES AND PROFITS 1981 : 1980

\$m £m 3,578 3,099 + 15% Pre-tax profits 586 520+11% (Year end October)

After a decade of swift growth, the market looks more uncertain. Jason Crisp reports

Duller shine on minicomputer industry

THE BEARISH view of the could look after their own minicomputer industry is that needs. it will inevitably be squeezed, at one end, by the falling prices of mainframe computers and, at the other, by increasingly powerful microcomputers.

Through the 1970s a number of minicomputer companies were developed by tiny groups of computer engineers into substantial companies. While many projects fell by the wayside, the 1970s were occasionally dubbed as the decade of the mini-

Digital Equipment (DEC), which bas dominated the industry and spawned (unwillingly) several new companies, was formed nearly 25 years ago. In 1960 It produced its first com-puter aimed at the scientific and engineering community at a fraction of the price of a comparable mainframe. Unlike IBM, it did not offer

more than the most basic soft- computers. ware or any acryice and support. The universities and turers oftce succeeded because research institutions which of high sales to the original bought DEC's first computers equipment manufacturers

DIGITAL EQUIPMENT was

the first company to produce

minicomputers successfully.

It has dominated the field

ever since with a meteoric

growth that has made it one

of the largest computer com-

DEC will celebrate Its 25tb

birthday later this year when

it expects to complete its

financial year to the end of

June with revenues of about

\$4bn and possibly he the second largest computer com-

pany in the world. IBM is

While other minicomputer

manufacturers have been squeezed by the recession

and high U.S. interest rates

causing customers to defer

purchases DEC has continued

to advance. In the first quarter of the current finan-

cial year profits soared \$8

per cent, partly due to sub-

also cost cutting.

panies in the world.

many times larger.)

DIGITAL EQUIPMENT

More diversification

DEC's first minicomputerthe PDP 8-was lau oched in the late 1960s. As computer software and systems houses produced application software for the computer a new market opened in companies and organisations who could never have afforded, or justified, a

mainframe computer.

computer companies in the world with revenues last year of 3.2bn. The company, based in an old mill outside Bosion, is avoid p still run by Mr Kenneth H. counts. Olsen who had founded it. Hopeful young computer engineers setting up their own companies, often round Boston's Route 128 area still bope to repeat Olsen's feat or that of Data General, set up 13 years its customers for that computer once designed DEC's mini- anyway."

SALES AND PROFITS

** rise
Revenues 2.4bn 3.2bn 35
Net income 250m 343m 37

Year ends June

One effect of the recession

is that DEC has been able to

ent lts very long lead times

of over a year to deliver a

computer down to several

months. Although the com-

pany's strong growth bas

been based on a number of

products including the PDP-11 minlcomputer and its disc

drives the greatest success

has come from its 32-bit VAX

minicomputer introduced four years ago. But even

DEC is baving to tighten its

Increasingly IBM is be-

coming a more direct com-petitor for DEC. Late last

(OEMs) which wrote applica- immune to problems affecting serviced the minicomputers, OEMs account for more than 50 orders pared thin. per cent of sales of some manufacturers.

It meaot that companies like DEC, Data General and Prime could expand manufacturing rapidly with a smaller burden of sales and support staff. But nainframe computer. as the companies have grown,
DEC is now one of the largest and the market has become softer, the manufacturers have become keener on selling to the eod-user of their products, and avoid paying the OEM high dis-

The growth rates of 40 per ceot and more of the 1970s have begun to look leas impressive. The abine, says one analyst, has come off the minicomputer industry: "But not because of the squeeze from mainframes ago by Mr Edsoo de Castro who and microcomputers. Not yet

Softening demand from the The minicomputer manufac- OEMs and recession in the U.S. showing considerable interest urers often succeeded because and Europe together with high but it is mainly confined to the interest rates are blamed. Even largest companies in the U.S. manufacturers DEC, which seemed at first and Europe.

tions software, installed and the industry last year, has seen manufacturers announced their to one. A number of companies its once over-long backlog of office automation products in the

> turers are looking to a new battleground where they will face formidable competition turers are beginning to feel head on. Last year a number of some lougher competition from leading manufacturers of minimicrocomputers although it computers including DEC, Hewooly represents a very small lett Packard, Data General and part of their total business. The Wang declared their strategies manufacturers of the so-called in office automation and demoo-supermicros are selling to strated a range of products potential miolcomputer which either are or shortly will tomers at significantly lower

tems and includes the telecommunications industry. The market for office automa-

tioo equipment remains relatively small. Several potential users of office automation are

Wheo the U.S. last year most were aiming minicomputer maoufac- for the Fortune 500 companies -as everyone else is.

The minicomputer manufac-

prices. Io other words they are The competition is across the trying to do the same thing to board and not just from other the minicomputer manufac-computer manufacturers. It turers as they themselves did to ranges from IBM and Xerox to the maioframe computer comtiny compaoies with specialist panies previously. The super-innovative products and sys-micros—with 16-bit microprotessors-are twice as fast as the standard microcomputers like

> One of the main advantages of the supermiero over the standard" microcomputer is

minicomputer five people at once as opposed are manufacturing supermicros including Altos, Vector Graphics, and Convergent Tech-notogy in California. Britain's large computer company ICL is to manufacture under licence a

> Rivers a small U.S. company. Although the mioicomputer manufacturers may be suffering a squeeze they, too, are producing both smaller and larger computers.

supermiero, made by Three

The fastest growth area in minicomputers is to powerful 32-bit machines. DEC which launched its 32-bit VAX family four years ago has the largest share of the market.

As minicomputer manufacturers widen their product ranges from powerful 32-bit those from Apple, Taody, Com-machines to small wordprocess-modore and Sinclair which are ing micros and office automation so new compelition encroaches on them and boundaries between the differeot categories of computer manufacturer become increas-

based on eight-bit microprothat it can be used by up to ingly blurred.

SYSTIME

Advance continues

SYSTIME is the second largest manufacturing control systems UK owned computer company including a flexible machining after ICL, which is many times its size. After an uncertain start in the early 1970s it bas grown rapidly. In its latest re-sults, just published, sales rose

by 33.5 per cent to £32.1m. Systime began in 1972 as an original equipment maoufacturer using DEC computers probegan ita own manufacture of a limited number of components in 1975 and now makes most of its own printed circuit its minicomputers.

Systime has also developed, and begun producing, a micro-computer for small business, iodepend ntly of DEC.

system which can control robots and machine tools linked to an automatic ecoveyor.

The National Enterprise Board—now part of the British Technology Group-bought a 26 per cent stake in Systime in 1977 for £500,000. About a year ago, wheo another major block vidiog turnkey systems to a of shares were sold to a Scot-range of small businesses. It tish Investment bouse, the NEB's holding was valued at

Based In Leeds, Systime is building a new factory costing boards, video display terminals. £30m over a period of four and cabinets. DEC still sup-years. It is being financed by plies the central processor for a loan from the European Investment Bank, selective grants from the Department of Industry and informally generated funds.

Systime is expected to go It is selling a number of public in about three years.

SALES AND PROFITS 1980 1981

\$m cbange Revenues 653.9 736.9 +13 Net income 54.7 40.9 -25 Year ends September

The VAX 11-750, one of Digital's powerful mid-range computers

year DEC announced its strategy for the office automation market where it will meet not only IBM bead on but a bost of other companies.

DEC employs more than 63,000 people worldwide, of which about 3,000 are in the

UK. Last year the company spent -\$398m on new buildings and equipment, some 90 per cent higher than the previous year. This is expected to rise to \$500m in the current year according to Mr Kenneth H. Olsen, DEC's president and founder,

SALES AND PROFITS 1981 Turnover: £32.1m Trading profit:

£24.06m

(+33.5 per cent)

GOODBYE DATASAAB

- -What's happened?
- —Datasaab is na mare. -What, the campany?
- -Na, just the name.

-Well, haven't you got a new name? Of course. We were given it as a new year's present. ERICSSO NEORMATIO SYSTEMS

—Datasaab?Ericsson Infarmatian Systems? What's gaing an?

—Yes, it is a bit camplicated at first. I'm nat really used to it myself yet. Let's take it word by word. Yau start.

-Datasaab. Let me see. Ta me Datasaab means Alfoskap and bank terminols. And business systems Series 16. And didn't I read samething abaut yau being taken aver by some telephane campony?

—That's right. Ericssan. Althaugh "same telephane campany" is na way ta talk obaut one of the world's leading telecommunications suppliers. The Ericssan Graup has aver 70.000 emplayees spread thraughout 100 countries. Sa we're nat lacking in resources. Or technical knawhaw.

-OK, then I suppose the word Information refers to this new office outomotion age the papers have been full at lately. Just about every camputer supplier is talking about systems that can communicate with each other, no motter

where they are, and telephanes ond teletex and distributed data pracessing and...

—You're an the right track. But watch aut far the people wha said that very fine cloth to a certain king. They're still around. And far athers making claims they will have a hard time justifying. To make the kind of systems we're talking about demands a very high level of talking about demands a very high level of system knawhaw. It also demonds access to cansiderable resources and the obility to coardinate them within a number of decisive system areas.

-Systems?!?

-Ericssan Infarmation Systems! A campletely new company created by the Ericsson Group through a merger of three different campany units, each with a unique area of competence needed to develop a genuine integrated information system. Yau'll hear from ussoon.

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The microcomputer business is now a major industry with world-wide sales of more than \$1bn. Guy de Jonquieres reports

A success story that surprised the giants

THERE HAS probably been no the frontiers which separate designed for scientific and pro- little more forceful demonstrations microcomputers from other fessional users, including experience. of the practical consequences of types of data processing equip- engineers and architects. Such of microcomputers. From enough to sit on or under a ing feature display screens humble beginnings in the middesk costing up to £15,000 and which can show detailed usually dedicated to a single graphics, including three-dimenwere quite literally put together user. in back rooms and private But within these broad paragarages - the microcomputer meters lies an increasingly wide business bas mushroomed inin range of equipment. At the a major industry with world lower end the hugely success-wide sales of well over \$1 bn a ful British-made Sinclair ZX-81,

seems set to continue, perbaps though its limited speed and even to accelerate in the coming processing power make it more In the U.S., which already accounts for 40 per cent of microcomputers in use worldwide, annual sales will reach there is a wide choice of micros about 2.6m units in 1983, three times more than in 1979, according to International Data Corporation, a market research

Dogmatic product definitions accounting, stock control, financan be misleading in an industry as fast-moving and as protean as ing.

which sells for less than £70, is This vertiginous growth rate undoubtedly a microcomputer, suitable as a learning aid than as a problem-solving device.

In the middle of the market which, when equipped with appropriate software and memory capacity, can undertake a range of useful data process-These include

> cial planning and ward process-At the upper end of the price

the microelectronics revolution ment. The term is generally machines offer high performthan the phenomenal growth applied to machines compact 'ance for their size and increassional simulations.

An example of this newer. type of microcomputer is the Perg. developed by Three Rivers of the U.S. which is to be made and sold under licence by ICL of Britain. At present the Peru costs £25,000 in the UK though the price is expected to fall sharpty once it enters volume production.

The microcomputer market was pioneered by young, entrepreneurial companies Apple, Commodore and Tandy Radio Shack of the U.S. Thetr founders were in many cases youthful electronics engineers who were enthusiastic about the potential for applying micro-

The huge success of their pro- with their shoestring resources. ducts took them - and many of the established giants of data

surprise. During the early years of the microcomputer boom, most of the mainframe manufacturers from IBM down stood on the sidelines, apparently uncertain how to tackle this new market. For hig companies, used to selling expensive systems to professional customers, to gear themselves to selling microcomputers entailed as big a change of attitude and organisation as would be required of a manufacturer of printing presses who decided to diversify into type-

Some of the early attempts proved disappointing. Texas Instruments, though a major manufacturer of electronics products from chips to calculators, fnund it hard to penetrate the not succeed, partly because the for it - on the contrary, it is

it. The microcomputer pioneers, for it. relied on outsiders to write software for their products.

manufacturers recognised that the market was becoming too important to be ignored for much longer. Perhaps the single most important event of launch its Personal Computer. which will compete directly with Apple, Commodore and the

The machine marks a new departure for IBM in more ways than one. The company has long been used to setting the pace in its traditional markets. But the new Personal Computer bears many signs of having been designed after a careful study of rival machines to select and incorporate their best features. Furthermore, IBM is clearly microcomputer market. Signimaking no attempt to mono-ficantly, Texas' first machine did pulise the supply of software

IBM's major product announcements - are awaited with some trepidation by its competitors. But in this instance the reaction of other microcomputer · manufacturers has been symptomatic of the buoyant mood of the industry.

Welcomed

Most, after inspecting it, have pronounced it a good and well-priced, machine which, should sell well. But far from expressing concern that IBM would dominate the market, other companies have forecast that IBM's muscular marketing effort would help to raise the level

of microcomputer sales nverall. Until now, manufacturers say, most microcomputers bave been sold to small- and medium-sized businesses, which used them as self-contained machines to carry out a mage of tasks. If such businesses bad used computerised systems at all in the past, many would probably have

computer bureaux.

There is still plenty of room for growth of this market, which is certain to remain a mainstay of microcomputer sales for a number of years. The potential in the UK has been underlined in a recent study published by Lancaster University's Department of Marketing, which esti-mated that only 10 per cent of small British companies have their own small computers.

But other market sectors are developing fast. At the bottom end of the market, the success of the Sinclair ZX-81 has demnnstrated that a hig demand exists among the general public for an inexpensive home computer. Commodore recently launched a £200 machine, the VIC-20, and it will he surprising If the Sin-

number of large companies are now planning to buy microcomputers for use as work- regularly trade software over stations for professional staff the telephone network.

business provide most of the software for companies to write programmes entrusted these operations to and managers. In many case, the machines will be linked to gether in networks by means of circuitry which will enable data

This type of system allows a considerable increase in the pri individual user, all the more if the microcomputer network is connected to a large data processing installation. It also pe mits the microcomputers to used as desktop terminals?

electronic mail. In the U.S., where telecon munications is cheaper and less hedged around by regulatory prohibitions than in Western Europe, many microcomputers have already been plugged into the telephone network.

The owners are able to tap into a wide variety of data bases clair does not attract direct, all over the country and to con-compensions in the near future. municate with each other. At the other end of the scale, Hobbylsts have started com--puterised sale and wanted ser-

Pocket calculator pioneer

preneur who has had loog ex- ZX 80. perience of the fiercely competitive world of consumer electronics. It was Sinclair wbo introduced the world's smallest television set, a btack plastic digital watch, and, was among the first to sell pocket calcula-nachine was ideal for people tors in the UK.

Having cut his association with his first company which was partly owned by the then owned Board National Sinclair

who wanted to learn about the computing hefore

committing themselves more powerful machine. Early in 1981, a second model, the ZX 81 was introduced

SINCLAIR RESEARCH was astonished the world by intro- aimed at the same market but formed in 1979 by Mr Clive ducing the cheapest personal offering greater flexibility for Sinclair, the 41-year-old entre- computer on the market, the the user. This machine has been sold throughout Europe and the company claims that production is running at a rate of about 500,000 a year.

In October last year Sinclair Research concluded a deal with Mitsui to export the ZX 81 in, sell 20,000 in the first year and 50.900 the next.

In addition to its Japanese connection, the company has also agreed to supply machines to American Express for its

Have you recently found yourself

becoming an involuntary

non-profit organization?



Centre: Mr C. Sinclair, foonder and chairman of Sinclair Research; left: Mr M. Ohtaki, assistant general manager, London branch and managing director of Mitsui Machinery Sales (UK); right: Mr H. Shimizu, manager of Mitsui Computers

Exploiting greater use in

COMPETING with Commodore and Apple for the leading position in the microcomputer market is Tandy, the radio and electronics goods group which retails through its own

roday, personal computers accounts for about 15 per cent of total sales which in the year ended June 30 1981 were \$1.7hn, an increase of 22 per cent on the previous year. Profits at \$169.6m had improved by 51 per cent over the previous year.

Expansion

Tandy had its beginnings in a leather goods and crafts busi-ness in Fort Wnrth, Texas, hut it bought Radio Shack, a Boston-based company with nine shops and a mail order business, in 1963.

Tandy shops in Europe, Japan and Australia, with a further 475 shops planned. n 1981 Tandy introduced three

and a microcomputer aimed at the home-user market. Since microcomputers continue

computer products.

the home

Tandy began selling computers in 1977, following the slump in the U.S. sales of citizens hand radio equipment which had gone through a period of rapid growth in the early to mid-1975s. Tandy saw the home computer as the emerging market and therefore developed its own systems.

Vnw there are about 6,700 Radio Shack outlets in North America, plus some 750

microcomputer models ranging from a hand-held com-puter (made and designed in Japan), a business machine

to be an expanding area for sales. Tandy is likely to increase its efforts in asso-ciated telecommunications and

BBC is partner for teach-in series

ACORN IS a British company end of 1982, founded in Cambridge three Schools-ge years ago. Originally the company marketed the Atom, a permal computer which was made in Hong Kong.
Recently it began full produc-

designed for its partnership Anstrian and his friend Mr with the BBC for a computer Chris Curry. They met at Cam teach in series which will hegin early this year. The television series was delayed for ahout a month because of the un-expected heavy demand from the public to huy the com-

Acorn has doubled its production to 10,000 a month through to learn English and later commanufacturing agreements with ICL, at Kidsgrove and Cleartone at Newport. The company's products are aimed very much at the educational and home markets and was chosen as a prethe Department of Education which aims to put a microcom-

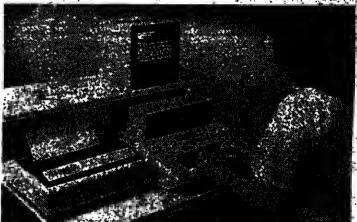
Schools get 50 per cent support from the DoE for the cost of huying a computer if they chose. Acorn or Research Machines computers.

The company was set up by tion of the microcomputer it has Mr. Hermann. Hauser, and designed for its partnership Anstrian and his friend Mr.



pleted his PhD at Kings College.

Its first product was called System I available through mail order followed by its Atom microcomputer. Sales in 1980 ferred machine for schools by were £1.4m with profits of £230,000. This year the company expects to achieve a turnover in puter in every school by the excess of £5m.



The £46 "Apple Writer" word processing programme in use

A fruitful way to education

STEPHEN WOZNIAK and Steven Jobs were computer hohbyists whn set up business in 1976 th sell the micro-computer they had designed. Mr Jobs sold his car and programmable calculator to raise the US\$1,200 capital to set up husiness in a garage. Five years later the com-

earnings rose



\$39.42m and the name Apple is widely known in the business world. Early in the company's development the two men realised that they were on the threshold of a multi-million pound business and sought the help of professional managers such as Mr Mike Markkula who became chairman of the company.

More than 2,500 employees work for Apple with manu-facture of microcomputers in

the U.S., Singapore and Cork which are sold through 4,000 dealers worldwide.

By the beginning December 1981, Apple had sold more than 300,000 microcomputers since 1977 with a strong bias towards the educatinnal market which is the largest market for such equipment after the business sector.

In fact, the company set up a non-profit foundation to help support the development of microcomputer projects in education and training. In 1981 the company provided the equivalent of \$460,000 worth of development for computer assisted learning systems.

However Apple does not limit itself to the educational field although it claims to be the leading company in this sector. Like its main competitors. Tandy and Commodore, it seeks professional users because applications in hidustry and commerce dominate the whole of the micro-

Superpets for businessmen

Among the three leading microcomputer manufac threes. Commodore stands out because it has a long history of survival in the consumer electronics field. It came through the fierce pocket calculator price-culting war of the mid-1970s which spelt disaster for many other elec-

tronies companies. In 1981, Commodore achieved its best-ever sales results of \$186.5m which was 48.5 per cent higher than the previous year. Much of this sales grawth is accounted for hy sales of microcomputers and associated systems. Microcompulers accounted for 71 per cent of overall sales com-Pared with 66 per cent in 1980 and Commodore expects

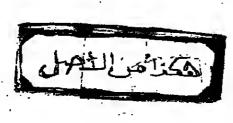
that the percentage will increase even further this financial year.

Yet it was only four years ago that the company intro-

commodore

duced its first microcomputer selling for less than \$1,000. When it entered this market it tried to sell its system at the lowest price to discourage competition at the outset in the hope of avoiding the price wars of previous consumer goods. As with other manufacturers the company has found that a substantial number of its systems go to the

Its machines are the PET and the VIC models which come in many different versions. In 1981 it introduced two models the VIC 2 which Commodore describes as a colour computer for the price of a home video game. This is intended to attract the home users who may now be bored with their video cas-sette recorders. The second machine is a superpet which is aimed at the business community, because professional applications of microcomputer are likely to remain the largest market for the near



The earnings reports of many companies are

experiencing a widespread outbreak of parentheses.

that signify operating losses in balance sheets.)

suggest the problem is solvable.

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widespread enough to have acquired an aura of

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to help cause immediate and dramatic improvement in

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In fact, the problem of diminishing profitability is

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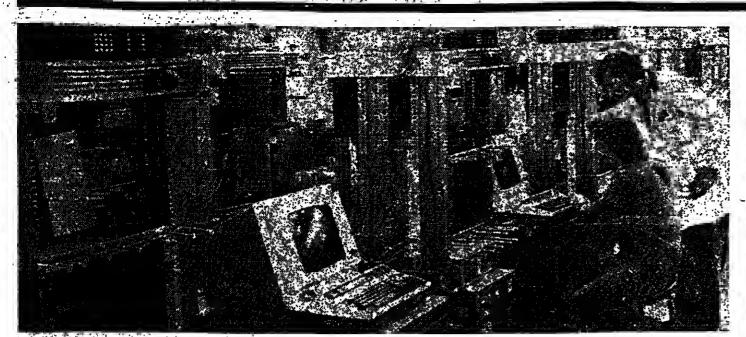
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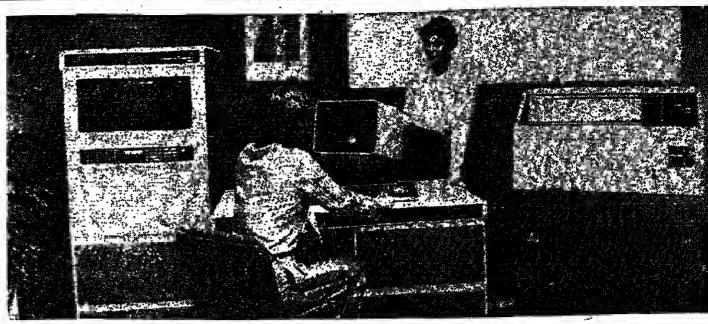
In fact, many of the largest and most successful

often erode unseen by management.

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Production tests (left) being made on ICL's ME29 range of high-performance, multi-purpose, medium powered computer systems. Right: the ME29 range, showing the processor cabinet, which contains the central processor, plus up to 1m bytes of main store; a new, multi-purpose workstation is on the control desk which also houses the Module 10 fixed disc stores. On the right is a PBS line printer

Every new product must be designed to communicate across the network with all other equipment in its range

The web ICL believes is worth spinning

THE PAST year has been a The loss included an extrateken the step, highly unusual testing one for many manufactoridinary charge of £78.1m to in the computer industry, of turers of large "mainframe". computers. For Britain's ICL, which is Europe's only indigenous mainframe company, it almost proved fatal. Battered by a serious reverse in its fortunes, ICL plunged deeply into loss and for a period early last year seemed in danger

The company is now fighting its way back. Its energetic young managing director, Mr Robb Wilmot who was appointed last May, has been working at high speed to reorganise its product range and to cut costs by shedding staff and trimming overbeads.

Its new chairman, Mr Christopher Laidlaw, a former deputy chairman of British Petroleum, has been struggling at the same time to bring the company's finances back on an even keel. Like Mr. Wilmot, he was appointed at the instance of the Government, which granted ICL a £200m loan guarantee last March to enable. it to continue borrowing.

September were predictably after falling in the previous six biggest machines which IBM and telecommunications technology.

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cover the costs of almost 7,000 aetting out publicly bis new jobs cuts, factory closures and other rationalisation moves.

Mr Laidiaw bas declined to make a profit forecast for the current year, though be expects. losses to continue during the first half. But after its recent painful surgery, the company clearly helieves that it has come through the worst and can now look forward to a sleady return to bealth. It hopes to return to profit within the next year, even if there is no improvement in the general economic situation.

City confident

Its confidence appears to be shared by City Institutions which were until recently very bearish about its prospects. Last month, they enthusiastically supported a £32.1m rights issue to enlarge ICL's sbrunken equity base, though the issue was admittedly priced at a bargain basement level.

Equally important, customer confidence appears to he flowing The company's results for the back. Turnover rose slightly in last financial year to the end of the second half of last year,

product plans up to the mid-

When Mr Wilmot took over, ICL had not only been ravaged hy a combination of recession, bigh interest rates and the strength of the pound; it had also been weakened by the burden of developing and sustaining its range of larger computers, which had absorbed most of its financial and technological resources and left it poorly placed to compete in a market where growth was increasingly coming from smaller

Mr Wilmot is adamant that ICL must remain a supplier of mainframe computers, which be believes will continue to play an important role in tomorrow's market. But he has taken steps to streamline its product range. by reducing the number of medium-sized mainframes from eight to three, each of which can be upgraded in power. He also plans to extend ICL's product line upwards to include very powerful computers which will compete directly with the

trend in computing is towards Wilmot is not trying just to compatible "market networked systems, which will catch up with the current state • With Mitel, a fa link together a wide variety of of the market but to anticipate information-processing equip- and intercept future develop-ment, from the biggest main- ments in technology. frame down to desktop To belp put this programme microcomputers and terminals into effect. Mr Wilmot has designed to handle both voice turned to other companies for

must be designed to communi-cate across the network with all most extensive of any comthe other equipment in its puter company outside the U.S. range. Furthermore, ICL products must also be able to communicate with equipment a rapid-fire succession of manufactured by other com- "collaborative agreements" panies. An important Wilmot with other companies notably: objective is to surround equipment made by other manufacturers, particularly IBM, with

Bold strategy

This is a bold strategy, whose implementation requires resources much larger than those which ICL can muster on its own. It calls for an aggressive entry into fields in which ICL had little practical experience, notably office equipment and telecommunications tech-

A central tenet of this principal bargaining counter approach is that every new bas heen the appeal of ICL's products and technology. His products and technology. His products the tener to substitute the substitute of this principal bargaining counter approach is that every new bas heen the appeal of ICL's product to which ICL introduces international marketing network and customer base, the and Japan. During the latter balf of last year, be concluded a rapid-fire succession of collaborative agreements" · With Fujitsu, one of Japan's

leading electronics groups. Fujitsu will supply ICL with microchips and semiconductor technology-which Mr Wilmot says is the hest in the worldto be used in ICL's new range of mainframe computers. Fujitsu is also acquiring ICL's only microelectronics plant, in West Gorton; near Manchester. ICL baa agreed to market in

Europe from 1984 very powerful Fujitsu computers which market from early this year a use the same operating systems as IBM machines. This will be produced by RAIR, which is ex-the first occasion on which ICL pected to sell for less than

With Mitel, a fast-growing Canadian manufacturer of electronic private exchanges (PBXs). Mitel will supply a powerful PBX, which ICL plans to market outside North America from 1983, and may itself market ICL's new DRS small business system.

ture capital company. ICL bas secured manufacturing and marketing rights on the Three Rivers Perq, a powerful professional microcomputer. ICL will contribute to the further development of the Perq and to the design of a low-cost version. • With Sinclair Research, manufacturer of the phenomanufacturer of the pheno- has won widespread respect, as menally successful £70 ZX-81 has his inexhaustible capacity microcomputer. The two com- for hard work. Characteristicpanies will develop jointly a sophisticated low-cost voice and data terminal, to be attached to the Mitel BPX, which will incor-porate a flat display screen using Sinclair technology. The screen will measure about 12 inches across but only one inch deep. With RAIR, a small British company, ICL is to make and

been discussing possible colla-boration with aeveral com-panies, including Logica, a leading British computer and profits. ICL has already leading British computer launched several interesting systems bouse. Logica designed a well-regarded word processor for Nexos, the National Enter-● With Three Rivers of Pitts-burgh, a small American ven-burgh, a small American ven-ture capital company. ICL bas years ago to market advanced office equipment.

Most in the industry agree that the new strategy is wellconceived and have been astonished by the speed at which its main elements have been brought together. The clarity of Mr Wilmot's thinking ally, be spent most of his Christmas break on a selling mission to the Middle East and

ICL's financial position, though still precarious, looks better than it bas done for some time. The Government recently personal computer already heing agreed to extend its £200m loan guarantee, which was originally pected to sell for less than for two years, to five years,

£200m Ioan

The one significant gap still In the near-term, two printo he filled in ICL's product cipal questions remain to be line is word processors. It has answered. The first is how new products, mainly at the lower end of the market, but most of its collaborative ven-tures will not start to bear fruit before next year.

The aecond question is how effectively the company will be able to manage its diversification into new areas. Success will require not only the mastery of advanced, and in some cases not yet fully proven technology, hut also of a variety of different marketing techniques.

ICL's board has been reshuf-fied, and fresh talent injected. But carrying the strategy through will also probably require further strengthening of middle management in key areas. It is to Mr Wilmot's credit that he bas almost single-handedly effected a major shift in ICL's direction.

Putting in place a cadre of executives who will maintain the momentum which he has created may turn out in the longer term to he an equally important achievement.

Guy de Jonquieres

LINEIV Datapoint have already installed 1,800.

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Computer companies have suddenly discovered the Local Network! Every business is going to need one, they say. Not just because Local Networks improve efficiency and profitability, but because they adapt so readily-and economically-to the changing needs of the business as it grows.

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There's a popular misconception that the British computer industry is suffering the same fate as our car industry: in danger of being overwhelmed by big American and Japanese corporations.

Totally untrue.

Granted, Britain's 'other' big computer company has had a few troubles lately; but not Systime. Systime is exceptionally successful – and British! At home recent major contracts have included installations for INMOS, Jodrell Bank, Minster Insurance, The University of Manchester and a highly complex system to link five of London's major teaching hospitals.

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Teleputer

ONE of Britain's most successful computer manufacturers is Rediffusion Computers, which last year launched its "System Alpha." Mr Mike Aldrich, left, the company's managing director, is seen at home with one of his "tele-puter" terminals, which has been described as a "revolutionary new range" of videotest devices that Rediffusion believes will also be at the centre of the home information system of the later 1980s.

The teleputer terminals combine broadcast television, video cassette recorder, video disk and telecommunications technologies with personal computing.

Significant developments in Britain. Alan Cane reports.

sudden increase in UK micro manufacturing

together with a leavening of small computer makers, none of them very successful, all of them with precarious finances.

Much of that has changed. ICL bas been forced to accept a bumbler attitude to the world outside and some of those small manufacturers are looking like winners in their own right. But the major change has

been the sudden surge of British microcomputer manufacturers. Once UK electronics specialists got to grips with microprocessors, they showed a talent equal to that of any country in applying them.

One example of the imaginative use of microprocessor chips is the Husky 144, a port-able computer launched only weeks ago by DVW Micro-electronics of Coventry.

The Hnsky is meant to be used in tough conditions; its specification would not disgrace a computer built to military standards. According to Mr David Viewing, DVW managing director: "It is housed in

writing an article of this kind aluminium case that is im-was simple. The British com-puter industry was ICL, abuse. It is truly programmable with a large, built-in liquid crystal display screen and a resident Basic interpreter." The computer is already

generating interest from construction companies, surveyors and the Eke. It could prove worthwhile competition for the very sophisticated dedicated calculators of the kind made by

Hewlett Packard.

Mr Clive Sinclair moved from pocket calculators (and watches and pocket televisions) to small, if not pocket-sized computers. His ZX80, and its successor the ZX81, shows innovation unmatched by any U.S. home computer company and quality sufficient for the machines to be marketed in Japan by

Mitsui trading corporation.
The Sinclair machines are distinguished by two features; a version of the Basic computer language ingeniously contracted so that it works on such a small machine; and a technique for cramming all the supporting circuitry for the microprocessor on to four chips, so cutting material and fabrication costs.

New series

If the Sinclair machines, now being built at an estimated 500,000 a year, have kindled the spark, the BBC is boping to fan the flames of popular computing with its instructional series, due to start next month.
The BBC computer has been

designed by ACORN, whose managing director Mr Chris Curry pioneered low price microcomputing in this country four years ago with a single board, minimum specification device called the Science of Cambridge Mark 14. Priced at less than £40, users built it themselves with all the fun of finding the wrong parts in the little plastic bags Science sent out. Thousands were sold.

The BBC machine looks very good value for money, Ironically enough, production is delayed because of problems with the very chips—uncommitted logic arrays from Ferranti—which spelled success for the ZX81. At the top end of the micro-

computer spectrum, there are a small number of UK manufacturers developing high quality systems for professionals.
It is significant that when Mr Rob Wilmot, ICL's new managing director, was looking for sultable small systems to market, he should look first to the U.S., for the high quality graphics provided by a micro-computer from Three Rivers

Corporation, and then to the UK for a machine called the Black Box huilt by RAIR. The RAIR microcomputer has a high reputation among programmers as an easy-to-use machine and is regarded as an excellent choice as a busine

Research Machines of Oxford

many London schools.

These companies, and a host of others including LSI Computers and Trivector Systems, are proving that the UK can hold its own at least in the

The distributors are perhaps best exemplified by Comart, a Cambridgeshire-based macrocomputer manufacturer and dis-

It is typical of a number of UK companies who have taken the best of the U.S. microcomputers and made a success of applying them to the UK market. Comart specialises in Cromemoc machines, one of the best regarded U.S. business

What of that clutch of minicomputer companies? major success story SYSTME, a Leeds based company which has grown from being a Digital Equipment OEM (a company which incorporates the guts of another company's products in its systems) to something approaching in-

was started by Mr John Gow, formerly a DEC (UK): salesman, who made the critical observation that DEC was building the best minicomputers in the world but failing to exploit their potential in the commer-cial world. (Minicomputers were, in the beginning, the brain children of engineers and scientists. A whole raft of U.S. minicomputer companies grew rapidly in the 1970s then stumbled as their engineer-managers failed to come to terms with the realities of business. DEC came through

unscathed.) Systime started by developing commercial applications software to run on DEC computers, then moved into the business of building its own computers based on DEC chios

Mr Gow also realised that one part of the future for business computing lay in terminals and stand alone devices for use in shops and other places of busi-It has now developed a line in modular terminals based around Intel microprocessor chips and has launched its own 16-bit microprocessor.

Systime's success is based on a sbrewd appreciation of market needs, quality systems implementation and good mainten-

It reward will be a turnover this year in excess of £80m. after early days in which its finances were so precarious that it needed a heavy cash injection from the old National Enterprise. Board (now merged into the British Technology Group).
GEC, the UK's major elec-

has frequently seemed and these biguous in its approach to the sun.

fact, the 380Z is the standard had the popular success their educational microcomputer in pedigree should have ensured. They were the original machines chosen for developing Preste and have been replaced now by other manufacturers' computer

in a number of systems. Ferranti builds the Argus range—chiefly for control and military use. The compilers available with the Argus machines are Fortran which compiles the most popular scientific processing language and Coral, which compiles the Ministry of Defence real time language. Good steady sellers, these machines, but little known in the business world.

Modular One

Computer Technology was started by a group of ex-Ellioit Automation employees includ-ing the remarkable I ann Barron, now director of strategy for Inmos, the state-backed chipmaking venture. Mr. Barron designed a computer, the Modular One, which proved first class for scientific work and which is still the basis of the

After years of sound but lackhistre performance, chiefly due: to scientific rather than com-mercial leanings, the company became part of the Information Technology group three years

computer maker which has traditionally looked for markets in research, medicine and education. It is also one of the few UK computer makers to supply computing hardware on an OEM basis to other manufacturers — the list includes Hill. Price Davidson, AlM and

Last year it announced a method of linking four of its Prince microcomputer systems to 28m bytes of disc storage; it has developed systems for linking its minis and micros to mainframes.

ABS Computers, a small but

fast-growing manufacturer which is now part of the Trafalgar House group, looks ready to make more impact on the market. It is very march a user orientated company with a special line in easy to use soft.

But one of the UKs most successful computer manufac-turers is Rediffusion Computers which last year launched its
"System Alpha"—which Mr
Mike Aldrich its managing
director calls a teleputer—an all-purpose business tool. If has all the facilities of a computer terminal, viewdata colour felevision, interactive video system

and personal computer. tronic company, makes a line of the list is not exhaustive but the distribution of British computers, the silver lines to the 4000 series but the company ICL's troubles is that it gives these companies a place in the

THIS YEAR'S WHICH COMPUTERT SHOW

30,000 visitors expected

THE WHICH Computer show, which opens tomorrow at the National Exhibition Centre, near Birmingham, is expect-ing to attract around 30,000 business executives looking for word processing and computing equipment, software applications packages, con-sultancy, bureau and aucil-

lary services.

The event, being held in Hall Four at the NEC from January 19 to 22, has been expanded by 60 per cent compared to last year's show. More than 75 per cent of this year's space has been rebooked by exhibitors at the

first show. Among more than 220 czhibitors are such leading comparries as IBM, Rank Kerox and ICL, plus the newer household names such as Tandy, Apple and Commo-

Research among the 1980 show's 24,000 visitors, re-yealed that nearly half the audiences came from small establishments employing under 100 employees and that 28 per cent of visitors were. directors or consultants. Nearly 40 per cent expected to purchase within the next

year, and 78 per cent infu-

The new leafures of the show are contributed by two leading professional bodies. The National Computing Centre is managing a consultancy and information service to help visitors size their recontrements, while the Centre registrements, while the Com-puting Services Association's CSA City will house com-panies providing software and bureau facilities. This new emphæis on software reflètts the changing costs of comput-ing in which software now tends to form the major sie ment of any computing in

enced the purchasing decision



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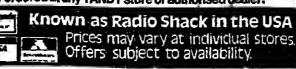
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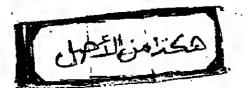
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Guy de Jonquieres asks Robb Wilmot, managing director of Britain's biggest computer group, about his new strategy

Why ICL's deal had to be with Fujitsu

G. de J.: ICL has staked its future as a mainframe com-puter supplier on its collaboration with Fultian of Japan. Did you ever consider a similar arrangement with a European or a U.S. company? R.W.: The collaboration with Fujitsu gives us access to their very large scale integrated cirtuit chins, primarily shose that are intended for use in main-frames, ICL is the only major arrangement. However, it is a developer of mainframes in very different market place, Europe, and none of the chip which ICL does not have the suppliers in Europe is actively ability to penetrate itself. We developing thips uniquely for are talking of data processing maintrages. So, really, it is not centres five to 10 times larger practical to seek a collaboration that the largest ICL installain Europe because the technology does not exist.

G. de J.: What about standing performance levels.

ollaboration with U.S. G. de J.: The European collaboration: with U.S.

R.W.: It's very difficult. The key thing that we want is chip echnology. We are not ceasing to design and develop mainframes. It is my view that



6 The key thing that we want is chip technology 9

Fullisu has very much superior chip technology than any of the American companies who are also in the mainframe business. G. de J.: Some commentators have suggested that Fujitsu may simply use ICL as a stepping stone to give it a head start in an inevitable Japanese assault on European computer markets. How do

you plan to safeguard against R.W.: I know this is a concern that people have, but let me and telecommunications merge, resterate that the collaboration I think you will see that stanwith Fujitsu is for use of their dards take on a very much more chips. ICL has always bought-in significant role than in the past chips. Our collaboration with Most large organisations are Fujitsu simply accelerates the only just beginning to imple-

3. (j²⁶

2 300 C ... 1000

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our own developers to produce or two, I think that there will state of the art computers ear-Her than they otherwise would, that standardisation of network-This strengthens, not weakens, ing standards is going to be a ICL's position.

G. de J.: Did Fulitsu insist that you market their very large computers in exchange for giving you access to their

tions. It is a market where Fujitsu have achieved very out-

computer market has been dominated for years by American companies. What are the prospects for European companies reversing that situation?

R.W.: I think that in the smaller computer area where a lot of the growth is-minicomputers, microcomputers, office systems and telecommunications products—we have already seen a much more significant penetration by the European manufacturers than has historically been the case in mainframes.

You have only got to look at manufacturers like Olivetti and Nixdorf to see very virile companies in the small systems market that are not only performing well in Europe but are performing well in the U.S. and

many other countries. G. de J.: ICL's recovery strategy includes no collaborative links with any other European companies outside Britain. Why is that? Do you see any realistic prospects for cross-frontier collaboration. between European companies in the future?

R.W.: We already have fairly extensive relationships with other European computer companies through the various think, going to take on a very standards organisations. As we high profile. move into the era when computing and data communications

be a growing understanding crucial issue.

G. de J.: There may be agreements on technical standards, but regulations imposed by different countries, particularly by national tele-communications' authorities. still differ widely. Will that growth of the networked computer systems which you envisage in the future?



6 We need major investment in computerisation of data bases 9

national boundaries. With communications and computing technology converging into information technology, I think there is a strong probability that you will see the telecom standard-setting and computer standard-setting bodies coming very much closer together in the coming year and even merging over the relevant standards. That does not mean that there won't be political overtones and genuine concerns about the free ownership and transmission of data. But I think that these will tend to get resolved because the ability to communicate freely

G. de J.: Do you see collaboration with other European companies remaining essentially in the field of technical standards, or could it develop into closer industrial co-operation?

skills and develop it for both parties, and the other company could do similar work in a different area.

My own view is that this is likely to build up around information technology products, particularly office products, where no one European computer company has got the complete spectrum of skills.

and accept that each of the major European countries wants a viable and vital computer industry of its own. Whatever co-operation may emerge in Europe, I don't think you will ever eliminate the desire by the French for a French computer industry. Same thing in Italy, same thing in Germany, same thing in the UK. Which iso't bad. I think one has to accept that that's life and not attempt to devise any grand plan which assumes that one can somehow

Therefore, you bave got to find lower-level relationships which are pragmatic in their nature. The Airbus is a good example. Bits and pieces of it were built all over the place, but it was not a Concorde. It R.W.: Well, of course, the worked, whereas the grand plan immediate growth is within has not yet been shown to work

G. de J.: The previous management of ICL com-plained loudly that the company suffered because foreign Governments gave more support to their national computer 'industries than ICL received. Is that still true? R.W.: Yes, it is.

G. de J.: How much of a bandicap is it?

R.W.: I think that any Government support is a mixed blessing. We do not go around with our begging bowl. Our job is to take the money that we spendwhich is significant, as we within the Common Market is, I spend £75m a year oo research and development-and spend it more wisely and effectively. We have a lot of work to do in that area, as well as lohbying for more enlighteoed procurement. It is our feeling that rather than subsidies for development,

it would be far more effective to see a higher level of invest-R.W.: I think standards will ment by Government in informabe the basis. There are poten- tion technology. At the end of tial areas for commercial the day, the nature of the

As we move into the next year pany could take a particular administrative Information tech- benefit. I don't mind. The product where it has unique pology can improve the productivity of the administrative process tremendously.

G. de J.: What do you mean

by enlightened procurement? R.W.; One of the problems the whole industry. I don't with the way that cash limits think we are suggesting that are applied in this country is that it is very easy to cut back oo capital investment, which is the seedcorn of productivity improvement and improved ser-At the end of the day I think vices in the future. I think that you have got to be pragmatic this has happened in many and accept that each of the Government departments. What we would like to see is the information technology capital budget separated from the rest

> of the cash limits. G. de J.: What sort of projects woold you like to see the money channelled into?



6 One has just got to take a very aggressive approach 3.

R.W.: We would like to see major investments io the computerisation of data bases. In many sectors of Government data are still held oo card filiog systems. The rest of the world has moved through one geoeration of computers and is now moving into the second generation of data bases, which are very sophisticated electronic filing systems.

G. de J.: Since the GATT and EEC rules on central government computer procuremeent were changed at the start of this year to end preferential procurement policies, there would be on guarantee that ICL would win these contracts.

R.W.: That's right, G. de J.: So the meaures which you are advocating could turn out to benefit IBM,

Government is a very large part of the total economy. If it is not aggressively investing in in-formation technology for its own use, it must be a depressent on the whole industry. I don't enlightened procurement means just buying ICL computers. It means a very much higher level of investment in all potential

suppliers. G. de J.: What order of investment would be appro-

priate? R.W.: The way we try to measure it is to look at the total oumber of video terminals in use as a percentage of the total workforce. Io the UK, we have a level of about one-third of that

Let's say we wanted to triple tbe oumber of termioals to briog us up to the same level as the U.S. That would mean putting in four or five million terminals at £1,000 each—£4bo io total. That's just for the terminals, and each of those would bave to be backed up by an equivalent amount of computer power, or more. That is total, for both private sector and governmeor sector. So if you halve it, the investment for government is probably £4bn or £5bo.

You can't do that quickly, and the worst thiog you can do is to try to catch up four years in six mooths because you will fall all over the place. But certainly a phased plan of two to three years to catch up and intercept the U.S. could produce very meaoingful results because the saviogs cao be tremendous.

Look at the way a lot of the Government's administration ls run. National Savings is still uncomputerised, the Service is and bospital administration is all manual. The regional administration in hospitals is computerised but it is not oo lice. All the records have to be seet off on bits of paper and entered on key nunches.

Look at the Post Office. . . look at a Post Office' counter. wbat do yoo see? Weighing machines. Go to Japan, for example, and the wbole thing is on electronic on-line banking. Instant withdrawal, instant paying-in. Electronic monitoring of the passbooks, mechanical say. printing, magnetic coding of R.W.: As loog as we all the passbooks.



Robb Wilmot: superior chip technology led ICL to Fujitsu

One has just got to take a first job is to correct that and very aggresive approach. It is trade profitably. We're close a malaise of British industry that capital is considered something to be saved, not spent. I take the exact opposite view, that capital is something you

want to find ways to spend. G. de J.: You have said that you intend to turn ICL into a genuine multinational. What is your strategy for selling in the U.S. and Japan?

at a loss in the past, and our thinking about Japan yet.

to doing that now. The second major thrust will be on the basis of a new micro which we will start producing early next year. From what I've seen in the U.S., it will get very wide acceptance.

We're also hoping to take our Distributed Mainframe, which is scheduled for late 1984, into the States io a big way, probably through American systems and software houses. R.W.: In the U.S. we've traded haven't really got around to

point in time at which we gain ment networks of computers, access to a new chip technology meaning that machines have to compared to a normal commers be able to talk to each other. relationships where one com- Government's business is largely riont one

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Terry Dodsworth looks at Mitterrand's plans to reduce U.S. control of the industry in France

Saint Gobain rides to the rescue

THE ARRIVAL of a Socialist Government in France is hringing with it yet another re-organisation of the computer

The restructuring of Cu Honeywell Bull, the only nationally-owned large mainframe computer manufacturer, is partly due to the Socialists' doctrine that strategic industries should be brought into State hands. But it also derives from the attempts of a newcomer to the industry. Saint Gobain, to pull Gii out of a recurrence of Its financial difficulties.

Efforts to create an independent and internationally competitive French computer group go back about 20 years. At that time, General de Gaulle was stung into setting up the embryo of the modern-day Gii when the Americans refused to sell his Government a large computer necessary for work on the nuclear defence programme.

Despite hefty subsidies, however. Gii never managed to establish itself fully. In 1976, was merged with the American-owned Honeywell Buli in a deal which gave Honeywell a 47 per cent stake in the French

group.
What the new Government is now trying to do is to annul. or at least reduce, this reversion to American control.

Because Cii is heavily dependent on American technology, the most likely result of the talks in Honeywell's stake to about 20 per cent in what will then be a nationalised concern. The negotiations with the U.S. group. however, have also coincided with profound chaoges in the French management which would in any case have altered Cu to some extent.

Objectives

These changes derive from the acquisition of the French sbares in Cii by Saint Gobain, the big glass-making and steel pipe conglomerate, which is also being nationalised. Saint last a transcription of the French with a large wide market coverage. Set Logabax on its feet again, while making the link with seen as one building block in this structure, dedicated essential of this reorganisation is nationalised. Gobain's entry into Gii preceded the Socialist victory in the elections last summer and was largely inspired by its need to quashed by its parent company, the French market. The Ameridiversify out of relatively stagnant manufacturing sectors. But it bas immediately shown itself to be a more vigorous partner in Cii than CGE, the previous owner of the French shares. which had steadily lost interest in further investment in the computer industry.

Saint Gobain's objectives clearly coincide with many of The glass-making group bas, for FFr 400m for the 1981 financial of widely based high-technology division through a series of deals. It has established a microchip company in a joint venture with National Semiconductor of the U.S., moved in on Cii, and also taken a 30 per cent stake in Olivetti, the Italian typewriter and office equipment

mini-computer manufacturers which ran into deep financial

THE TOP 25 COMPUTER COMPANIES OPERATING IN EUROPE

Data processing (DP) revenues in \$m for year 1980. This table does not include Philips, for which figures are not available.

| Ran 198 | k; 0 Company | Parent company HQ | European DP rev. | % change European DP rev. 1979-80 | DP rev. domestic (parent company) | DP rev. worldwide | Total rev. Europe | Total rev. worldwide | LEA. | worldwide | 1979-80 | Total employees, worldwide | Year ending |
|------------|-------------------------------|-------------------------|---------------------|--|--|----------------------|----------------------|-------------------------|------|-------------|---------------|----------------------------------|----------------|
| 1 | IBM - | U.S. | 9.902+ | +12 | 12,426 | 26,213 | 9,902 | 26,213 | +15 | 3,562 | + 18 | 341,279 | Dec Sept. |
| 2 | Siemens | W. Germany | 1,505 | +10 | 1,204 | 2,040 | 12,921 | 17,978 | +14 | 356. | 7 | | Dec |
| 3 | Cii-Honeywell Bull | France | 1,444 | . +23 | 789 | 1,489 | 1,489 | 1,489 | +23 | 43 | | | |
| 4 | | UK | 1,300 | +13 | .665 | 1,494 | 1,271 | 1,494 | +15 | 37 | + 50 | 32,582 | Sept |
| 5 | Olivetti | Italy | 876 | +23 | 479 | 1,221 | 1,847 | 2,545 | +18 | 58 | + 52 | 52,339 | Dec |
| 6 | Sperry Univac | U.S. | 825 | +13 | 1,596 | 2,800 | 1,600 | 5,000 | +15 | * | | 87,500 | Mar Dec |
| 7 | NCR | U.S. | · 810 | +27 | 1,428 | 2,525 | 1,064 | 3,322 | +11 | 255 | + 9 | 68,000 | |
| 8 | Digital Equipment | U.S. | 786 | +39 | 1,928 | 2,368 | 678 | 2,368 | +31 | 409‡ | + 39 | 55,000 | June |
| 9 | Control Data | U.S. | 764 | +34 | 2,206 | 2,791 | 764 | 3,809 | +18 | 148 | + 25 | 57,068 | Dec |
| 10 | Burroughs | U.S. | 734 | +14 | 1,635 | 2,902 | 734 | 2,902 | + 4 | 82 , | 75 | 55,000 | Dec |
| 11 | Nixdorf Computer | W. Germany | 707† | +23 | 410 | 855 | 797 | 855 | +25 | 42 | - 00 | 13,650 | Des |
| 12 | Hewlett-Packard | U.8. | 593 | +54 | 742 | 1,546 | 1,054 | 3,099 | +31 | 269 | + 33 | 57,000 | Oct |
| 13 | Thomson-CSF | France | 497 | +17 | | • | * | 3,855 | | *. | - | 8,160 | Dec |
| 14 | CIT Alcatel | France | 493 | +18 | . 345 | 518 | 775 | . 1,802 | • | 68 | | 40,066 | . Dec |
| 15 | Honeywell Information Systems | U.S. | 491 | +29 | 1,226 | 1,634 | 985 | 4,925 | +17 | 294 | + 13 | | Det |
| 16 | Plessey§ | UK | 289 | +18 | 154 | 268 | 1,286 | 1,626 | +16 | 89 | + 28 | 44,499 | Mar |
| 17 | Datasaab§ | Sweden | 276 | +36 | 99 | 276 | 276 | 276 | +36 | • | *1 | 3,354 | Dec |
| 18 | Rank Xerox§ . | U.S. | 254 | +50 | 482 | 846 | 2,464 | 8,197 | +17 | 619 | + 10 | 120,480 | Dec |
| 19 | Kienzle | W. Germany | 232 | +17 | 143 | 216 | 400 | 400 | +18 | 11 | + 22 | 8,300 | Mar |
| 20 | Ferranti | UK | 218 | +47 | 122 | 201 | 380 | 468 | +12 | 22 | + 12 | 17,270 | April |
| 21 | Memorex§ | U.S. | 175 | - 7 | 415 | 501 | 268 | 769 | + 4 | -29 | -192 | 11,000 | Dec |
| 22 | Data General | U.S. | 171 | +56 | 488 | 654 | 166 | 654 | +29 | 55 | + 10 | 14,370 | Sept |
| 23 | CISI | France | 156 | +14 | 133 | 168 | 156 | 168 | +15 | 4 | - 20 | 2,150 | Dec |
| 24 | ITT . | U.S. | 155 | +24 | 260 | | • | 21,996¶ | +13¶ | 381¶ | — 42 ¶ | 348,000 | Dec |
| 25 | Amdahl | U.S. | 152 | +23 | 243 | 394 | 152 | 394 | +23 | 15 | – 1 | 4,021 | Dec |

* Not available. † Figures include word processing. ‡ Profit before tax, not net income. § Estimates. ¶ 1979 results.

Source: Datamation/Logica.

those of the new Government. between constructing a

More recently, in collabora-tion with Olivetti France, Saint Gobain gained control of Logabax, one of the larger French

thorpe and the basic oxygen

steelmaking plant at Lackenby. Orders for the

electricity supply industry

include computers and dis-

plays for the CEGB's North East and South West regional

ing a computer-based group with a range of activities that

resignation of M Jean-Pierre Brule, its managing director.

prove that they can give France a viable computer industry. Cii.
having gobbled up subsidies of
FFr 1.2bn since 1976, and
making a slight FFr 160m prost
in 1980, is expected to lose
between FFr 300m and
TEM in particular, dominates

Even if the Honeywell negotiations are successfuly concluded, it will remain strongly dwarfs the position of its main dependent on the American rivals, another three American group for at least half of its producers - Univac. technology, since a significant Data and Burroughs. But even of the hig French groups in this

set Logabax on its feet again, in this category.

tially to big computer production: a rival plan by Cii itself to move in on Logabax was remains the dominant force in turing plants in France (ironicrule, its managing director.

These manoeuvrings by Saint the U.S. than Cii), is reckoned Gobain and the new Govern- to have captured about 33 per ment, however, have yet to cent of the total French market for large and small machines. This is about twice as much as Cii, on about 17 per cent, des-

> wnien account Its 70 per cent slake competely Control

Stewart Fleming analyses recent upheavals

proportion of Cii's sales is of in the middle range sector, clearly illustrated Saint American-made computers for where Gii is at its strongest on Gobain's intentions of establish- which it has no immediate sub- about 37 per cent, IBM leads stitute. At the same time, Saint with 40 per cent of sales. ICL Gobain has to show that it can of the UK has about 3 per cent

> French manufacturers bave been hardly more successful in ensuring that the country's in-dependence is in most other sectors of the market. The small computer and peripherals industry, for example, has been hit by the collapse of Logabax. While other French manufacturers, such as CIT-Alcatel, Sagem and Electronique Marcel Dassault are now developing quickly—partly as a result of a FFr 660m Government-backed aid plan-foreign competition remains fierce: Olivetti, for example, has a prominent posi-

tion in this sector. IBM, in particular, dominates The strong point of the the big mainframe market. French industry is in software, element in the industry's sales. of the leading European companies, such as Cap-Gemini-Sogeti and GSI, a subsidiary of the GGE electrical group. But much of the current expansion

field now seems to be going into the field of automated office equipment, where the application of computer-based systems presents big opportunities for growth.

This part of the market in France is reckoned to be underdeveloped compared with other industrialised countries such as the U.S. or West Germany. It also under-supplied manufacturers, who French have allowed importers to capture at least 50 per cent of sales without building up com-pensating exports: the trade affiliate and the offi deficit was calculated a year ago ment applications in

More aid

The past French Government began efforts to try to copumping in aid tied to specific. contracts. CIT-Alcatel, the CGE subsidiary, is in particular said to have benefited from these

dimension to face up to the challenge that is coming from multinationals like Xerox, Bur roughs, Triumph-Adler, Philips

CIT, for example, has take over Roneo Vickers of the UK in an attempt both to expand its product line and develop its international sales network Saint Gobain's link with Olivett was conceived in a similar manner as a means of building bridges between the group's computer technology in the Oil ment applications in Offvet

at about FFr 3bn, and country grow further because of the mainframe computer sector and rapid 20 per cent to 40 per the fast developing office equipment expansion in the domesic ment applications, Saint Goldsin holds many of the most important of the future of portant cards for the future of the French industry.

Its sudden move into this conceived on an ambitious scale. ordinate a response to this designed to give France a weakness in the industry by strong position at home and the hase for healthy exports. But until the talks with Honeywell are concluded, and the new organisation of the company schemes. But the two most settled into place after national important developments have lisation, it will not be clear been the attempts by two of the exactly how the company in. tends to proceed under its new

NEWS

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BUSINESS **Ferranti** first in computers

The computer activities of Ferranti date from 26th October 1948, when the first order for a UK-built computer was placed. In recent times Ferranti Computer Systems Ltd has put most emphasis on real-time on-line systems for civil and defeoce applications taking respon-sibility for system design, manufacturing, programming and setting-to-work.

'New technology' The Ferranti CS7 computer assisted composing system. Is now well established. Users include the Printing Industries Research Association, the Observer newspaper, Odhams and Her Majesty'a Stationery Office (for the production of Hansard).

Briefly ...

Ferranti Computer Assisted Command System (CACS) will be fitted in a variety of naval ships during the 1980s.

Computerised Message Switching Systems from Ferranti are in use in three centres in Australia, at Heathrow Airport and at the Meteorological Office.

Ferranti computerised command and control systems are operating with aeveral UK police forces and a resource mobilisation system with the Greater Manchester Fire Brigade (the first of its

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has ordered process monitor-ing systems for the Queen Anne blast furnace at Scun-

grid Control centres and a monitoring system for Fiddler's Ferry power station. From Germany important orders include the control system for an ethylene plant being built by Linde in Portugal and seven Argus systems for Brigitta and Elverath, a company owned jointly by Deutsche Shell AG

TRANSPORT

Travel computerised

The British Airways BABS reservation system has been extended to include Ferranti terminals in seven Japanese cities. An automated check-in service using Argus com-puters is working at Hong Kong and Manchester Air-Ferranti intelligent ports. terminals have also been installed by British Airways for their workshop control

In the field of road traffic cootrol several Ferranti dual computer systems have been installed including those at Nottingham, Goventry, Cardiff, Leeds and Manchester.

Now single computer systems are to serve smaller cities and large towns such as Preston and Huddersfield. London's Underground is also using Ferranti computers. The system installed at Leicester Square for the London Transport Executive handles the monitoring and switching of power supplied to the Central Line. Eight computer-based data communication systems for rail-way signalling control have open delivered to the LTE

who are also evaluating a

Ferranti system for the

northern end of the Picca-

The good news is RERRANTI Selling technology

Germany sees growth in data processing

steam last year as the weakness in the market place. in the economy finally began to make itself felt in decisions hy companies to cut back or postpone capital spending. In the past the data process-

ing Industry in Germany has been able to buck the overall economic trend and has been accustomed to steady double digit growth rates. But after a strong first quarter with sales up around one fifth, the second and third quarter performance was flat, and industry forecasters were concluding that for the year as a whole the DM 40hn (£9.3bn) a year data processing industry would show little or no growth overall, even though individual sectors were The main factor behind the weakening demand was the performance of the economy, In 1980 capital investment in German industry had held up well as economic growth slowed. But in 1981 as companies began to suffer what, according to the Bundesbank, the West German central bank, has been the pressure to trim back its reslump in corporate profits in the post-war period, companies began to cut back investment spending. Surging interest rates, which hit record levels during the course of the year and made long-term finance either unavailable or prohibitively expensive, were another anical equipment market, factor in decisions to trim Olympia Werke, the AEGinvestment spending. Above all medium-sized companies, which have been a strong market for data processing equipment, have

The industry's problems in for phasing out products which the result only of weakening obsolcte. demand, however. Aggressive Machines which dominates the market with an estimated 55 per cent share, has added to the its data processing operations. pressures on profitability. What has also become clear, however, main board member responsible over the past 12 months is that for its data processing operasome of West Germany's leaders tions had to step aside and in the data processing and the small business compuler

been particularly hard hit.

THE BOOM in sales of data office equipment sectors of the segment of its data processing processing equipment in West industry have been slow to operation was split between the Germany hegan to run out of respond to the pace of change

> Perhaps the most dramatle example of the problems this has created was provided by the grim news from Triumph-Adler, the office equipment subsidiary of motor manufacturer Volkswagen. Volkswagen lavished an estimated DM 1bn on the acquisition of Triumph-Adler, beginning in 1979, a diversification move which was seen as opening up a new growth market for the motor

Heavy losses

In carly September, however, came the news that the company was facing heavy losses for the year and was examining a drastic re-organisation programme which would cut its workforce by a third and involve the closure of its second largest German plant, the Adler works in Frankfurt.

organisation plans, but the message was that the company considered significant parts of its product line to have heen overtaken by technologichange, and that too many of its products were still concentrated in the electro mech-Telefunken subsidiary is another former typwriter manufacturer which, like Triumph-Adler, has recognised that it, too, must accelerate its plans

the past year have not been advancing technology has made demand, however. Aggressive Siemens, the leading German price competition, above all computer company with a 20 from International Business per cent market share, has also felt the need to shake up the management, and structure of

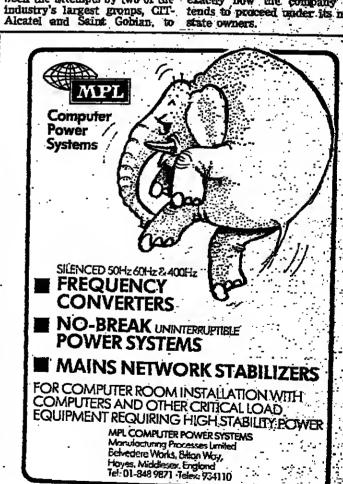
Thus earlier last year the

communications division and the power engineering division.

The changes led to specula tion that Siemens might be cutting back its computer operations, something which Siemens has roundly denied. On the contrary the company has pointed out that its research and development spending in the computer business is cur-rently running at DM500m a year, and the company sees Itself as being very firmly placed to carve out a strong position in the market for equipment for the offices of the future.

It is this sector of the data processing market which is ex-pected to be the fastest growing in coming years, and Siemens is not alone in its efforts to prepare to take advantage of the opportunities presented by the convergence of tele-communications and data pro-

cessing lecbnology.





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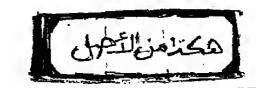
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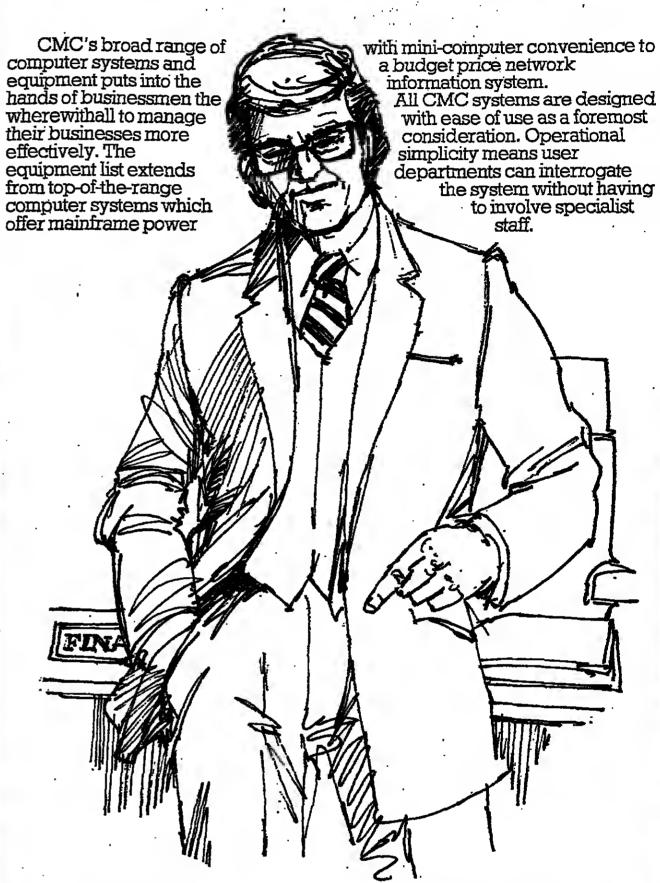
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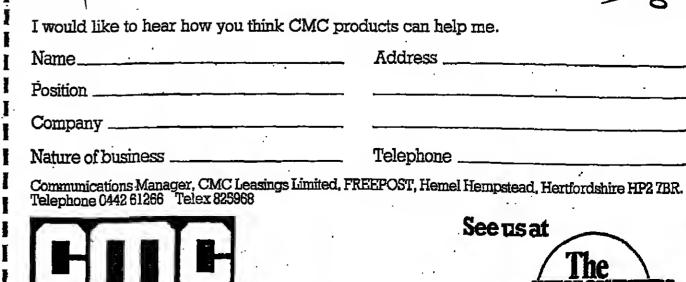
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Computer systems undergoing final tests at Olivetti's Scarmagno plant, near Turin. In Europe, Olivetti has a strong market position, particularly in Britain, West Germany, the Benelux countries, as well as Italy.

Outside Europe, Olivetti is winning good sales in Latin America, the Far East and Australia

James Buxton examines operations by Olivetti and IBM Italy

Italy is European leader in use of small and large models

THERE. ARE only two signifi- But it stayed in the field of sence in the Far East and In the first half of 1981 they cant companies in the Italian data processing and in 1965 pro- Australia (11 per cent). made up 20 per cent of turnthe distinction of being the country's most profitable com-

proportion of small computers to produce electro-mechanical in operation, and the highest terminals. By 1975-76 it was proportion of large ones, while machines is below the average, category of a distributed data. Olivetti is almost exclusively in the field of small business com- large computer. Throughout the puters, and distributed data 1970s it strengthened its posi-processing, while IBM concention in these fields so that it United un large computers now produces a complete Olivetti's data processing business ness accounted for nearly 60 computers and of distributed per cent of its turnover in the

cant exporter, exporting about two—the difference is in the a third of its output. Olivetti is software. An exemple of distri-an international group only 35 buted data processing are per cent of whose sales are Olivein's systems for use in made in Italy. It has been banks in which it has tradition-enjoying a period of fast-rising ally been strong. It won a sales and improving profitability large order from the automation ever since the arrival in 1978 of the automation of a network of Danish savings. Sig Cario De Benedetti as chief executive and a leading share British building societies in holder. Because it is involved 1981. Recently, it beat Japanese in both office automation and competition to modernise the information processing it is Nokyo network of Japanese better placed than some of its skyling burds, a client which rivals for the coming battle to produce electronic office equip-

Financial crisis

typewriter manufacturer at and terminal and data entry Ivrea in Piedmont in 1908, started to manufacture com-puters in the late 1950s. But in tion in Britain, West Germany, 1964 the combination of a finan-and the Benefux countries, as cial crisis for the company and well as Italy. Sales in Europe lack of Italian Government made up 70 per cent of total support for its computers—in group sales. Outside Europe, the form of substantial orders Olivetti has a strong position -forced it to withdraw from in Latin America (12 per cent

... manufacturing duced the dist scientific desk-top

microcomuter. From then on machinery and large com-

-for use in banks, etc. and producing an electronic verprocessing device, linked to a large computer. Throughout the data processing devices.

In terms of hardware there first half of 1981. In terms of hardware there while IBM Italy is a significial facilitie difference between the banks in 1980 and two for Olivetti has been serving for 10 years. Olivetti claims that about 75 per cent of Italian

In 1980, Olivetti's business Olivetti, which began as a made up 23 per cent of sales, systems a further 16 per cent.

of all sales) and a useful pre-

Les main disappointment has been the U.S. market in which company in Europe and the structure concentrated on using it has failed to make money sixth biggest in the world as a its experience in mainframe for most of the past 20 years producer of information process computers to make electronic Olivetti's involvement there sing equipment and office pro- desk-top equipment thus bridg- has been mainly in the form of ducts; and IBM Italy, which has ing the gap between its office office products such as typewriters. Tackling such a large market that is on the door step of the big U.S. information processing equipment makers has proved difficult. U.S. sales in 1980 made up 7.5 per cent

> Now Olivetti is using a new approach to the U.S. market. In 1980 it took a stake in a manufactures automatic teller machines. Olivetti is now selling to the U.S. market through Docutel.

> An important reason for University stake in Docutel, as well as that in Syntrex, a small U.S. company which makes word processors, is that they enable Olivetti quickly to gain new technological knowhow which it does not always have the capacity to produce itself. The whole business is changing so fast that the loss of a year's research and development work can be disastrous to a company's financial position.

New products

"I keep telling my colleagues: we have to earn our living every single day," says Sig Vittorio Levi, director of Clivettes information processing and office automation division. Olivetti products are constantly being superseded by their more efficient, usually smaller successors, and its factories are in a constant process of change as new products are introduced and working methods changed.

In terms of sales growth, the company's biggest success at present is its range of electronic typewriters, which it was the first company to bring out. It is on this product more than any single other that the turnround

revision and other processing operations previously confined to more sophisticated work word

not come under the heading of computers. But it does show the way in which Olivetti's proto cash registers, are gradually converging into a set of electronic products with increasingly similar components and functions. The next step will be the electronic office, almost homogenising today's computers, office equipment and telecommunications devices.

Olivetti's involvement in both office equipment and computers gives it an advantage over some equipment makers like Olympia, But as the hardware of the future becomes more similar it will face competition from companies from other fields like telecommunications which have not previously been involved in Olivetti is anxious to expand further into telecommunica-

To complete its offerings in the range of computer products Olivetti returned in 1980 to selling mainframe computers under licence. The computers are made by Hitachi of Japan and by IPL, a U.S. company in which Oliverti has a 33 per cent stake. Last year Olivetti sold 51 machines, the majority of them in Italy and is now able to offer its clients a full range of compatible computerised equipment.

- But this is a small operation compared with the performance of IBM and the other U.S. and manufacturers. IBM Italy alone had sales in 1980 of Li.492bn (£648m), compared with the turnover of the whole Olivetti group (only 35 per cent of which was in Italy) of L1,102bn, on which it made a profit of L50bn. in the company's fortunes under IBM Italy made net profits of Sig de Benedetti has been based. L178bn.

William Dullforce on growth in financial terminal systems

Nordic states mount a challenge

ties with extended welfare the lead in introducing elecadministrations, the four Nordic tronic debit systems at the retail countries - Denmark, Finland, shop level, under which shop Nerway and Sweden—have been customers pay for goods with a quick to adapt to the use of eard which immediately debits computers. They offer a relatively small but sophisticated planned by the Danish banks market in which selling such has run into some hitches with cesses are prized by major the bank employees' union and

the efforts of a few Nordic companies to build and market purpose computers failed. New however, with the expansion of office and factory automation and of personal combutting some Nordic concerns naking smaller systems have tarted to grow fast.

In one field, financial terminal ystems, the Nordic market is articularly advanced. Helped y a tradition of co-operation oats in high-wage societies he Nordic banks have deve-

politicians but is expected to be world producers politicians but On the manufacturing side, realised soon.

In the international context. one of the most interesting recent developments from the nordic area is the attempt by. L. M. Ericsson, the Swedish telecommunications :group, to exploit its know-how in computerised communications te carve out a share of the business systems market.

Ericsson has just acquired Datasaab; the loss-making md spurred by the need to curb Swedish computer and terminals producers which is the remnant of the Swedes' earlier efforts to sped large computer linked break into the world computer stwerks of teller terminals, market From January, L. hich they have steadily Datasaab will be incorporated in a new Ericsson Information

Systems, which will operate purpose computers, 6.5 per cent four divisions. of small business systems (in-In the U.S., Ericsson has gone into a joint venture, Anaconda-

Ericsson, with Atlantic Rich-field, which will be offering Most significantly, Quantum Science Corp. foresaw a 23 per cent annual growth in sales of Ericsson's new digital PARX small business systems in the system to the American market Nordic area in the five-year and will be a springboard for period to 1984, compared with entry into the office equipment 13 per cent for general purpose computers and 12 per cent for

Shipments

Statistics on the Nordic computer markets are not easily city in general purpose com-compiled because of the varying puters, for some 37 per cent of definitions and demarcations used, but in 1980 Quantum about half the terminals. Science Corporation assessed Nordic market at \$528m. It put sales of small business systems

nals at \$220m. These figures would give the at an annual lever of 5-10 per Nordic countries about 4 per cent while small computer sales cent of the overall Western were going ahead at between European market for general 20 and 30 per cent a year.

the small business systems and The Swedish Office and Com-1979 shipments of general pur- puter Equipment Suppliers pose computer systems to the Association recorted an increase of about 20 per cent in its members' sales during 1980. It at dollars 194m and of termi- estimated that sales of general

Sweden accounted for over 40

per cent of the installed capa-

cluding personal computers),

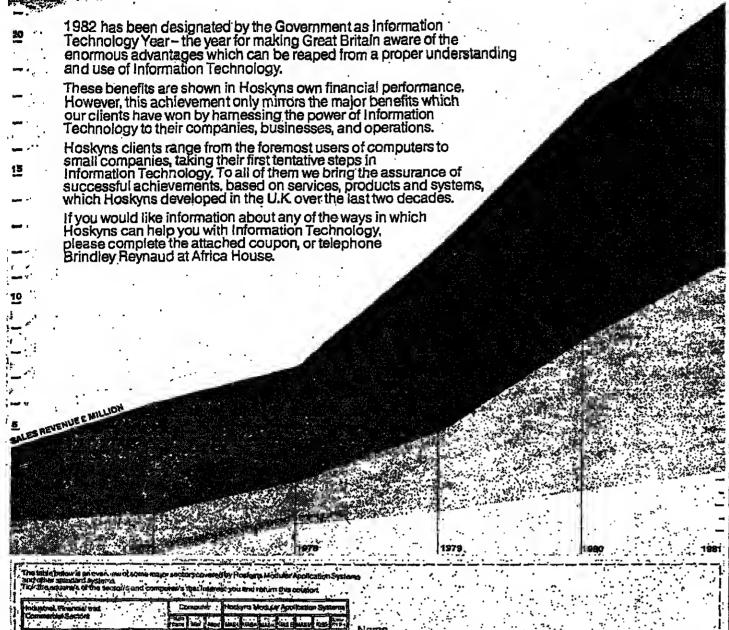
and 9 per cent of terminals.

purpose computers were rising

CONTINUED ON NEXT PAGE

Our clients make the real money





Nixdorf: the 85,000 Computer Network.

All over the world, Nixdorf is putting computer power in the hands of all kinds of people - people who need to originate data; people who need to process data; people who need up-to-date information rapidly. In fact, tha concept of bringing compulers to people right where they work was pionaered by Nixdorf.

As a result, large companies have gained the benefits of distributive processing; small businesses have gained the computer. What's more, Nixdort's software technology has enabled people to communicate with their computers in simple terms. And Nixdorf computers are easy lo use, speaking your language in 31 coun-

Nixdorf computers also "talk" to each other, and to other computer systems, so

growing companies can have a problem-solving communications network to build on. Nixdorf combines the most advanced technology and application known-how with a long-proven record in engineering and manufacturing to produce computer systems unmatched throughout the world. Our customers find this blend of experience increases their competitive edge.

Equally important, you'll find the Nixdorf Support Network wherever there are Nixdorf systems. Our worldwide network numbers 15,000 responsive people. They all contribute to the Nixdorf concept of putting data processing power where the work needs to be done: in the hands of

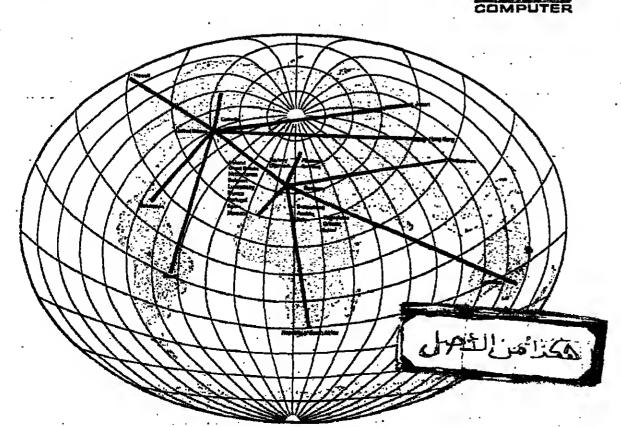
people in companies, small, medium and large; in manufacturing and distribution; in banks and insurance companies -

wherever computers can help. Our network of 85,000 computer installations - Distributed Data Processing Data Entry, Word Processing and General Business Computer Systems - is only the beginning. Join us. Anywhere you need a solution to your management problems, start by talking to Nixdorf.

For further information Nixdorf Computer AG Furstenallee. 4790 Paderborn, W.-Germany Tel-05251/2001,

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NIXDORF



COMPUTERS XIV



Many of today's visual display units (VDUs) are part of distributed data processing (DDP) networks. Others form stand-alone systems for business, industry and science, while many others are merely local tiput terminals for mainframe computers. Above: ICL's DRS 20 series of multi-microprocessor-based distributed

Geoffrey Charlish picks the winners in this thriving market

So many developments in the data handling field

puter can go about its business, data, generally from the buman environment, has to be acquired

done is crucial to the success of the whole computing operation, much effort has been put into ways and means. In the early days it was a application.

choice between punched cards, paper tape and the teletype-writer. They were all relatively slow and cumbersoma compared with today's methods which include such devices as the visual display unit (VDU), tha hand-beld terminal with miniature keyboard and display (plus memory and intelli-gence), optical character and reading, magnetically striped plastic cards, bar code reading and electronic data

lozging.

The main workhorse is the VDU terminal, able to display both entry and output data and usually possessed of a good deal of intelligence. This allows it to process and manipulate data, in ways to suit the task at hand, before communicating either with other terminals of the same kind, or with a central computer.
Many VDU terminals today

are part of these distributed data processing (DDP) networks, others form stand-alone small systems for business. industry or science while many others are merely local input terminals for main frame com-

The sales of DDP terminals alone in Western Europe.
according to IDC Europa. will
be \$500m this year, predicted
to rise to \$2.8bn by 1986.
The VDU reigns supreme

because it allows input information to be entered quickly, formatted, edited and other-wise manipulated in both alphanumeric and graphical forms-computer-aided design is an outstanding example of the latter.

Specialised examples now exist in many walks of life. For example, in the building society branch customers' deposits and withdrawals are entered and passbooks are automatically updated. Io shops. point-of-sale terminals allow customers' purchases to be entered, receipts printed and accounts debited, and on the factory floor terminals keep a tally of production activity for later consolidation by a main computer. There are many other special applications.

An interesting recent intro-cription, as wall as just the duction by Burroughs, the price.

MT 1500, allows shop floor data Keying all this in at the till is input by most of the known methods—keyboard, Hollerith input. card, optical character recogni-Since tha efficiency and tion (OCR), bar code reading accuracy with which this is wands and magnetic striped plastic cards. Driven by a microprocessor this wall-mounted unit, it is claimed, can be tailored to almost any industrial

> But the above methods ara widely amployed in their own right. The chaque for example, of OCR-millions are identified daily by the printed number along the bottom, comprehensible to both human and Hand printing can be read by several devices, while others can read whola printed pages for text entry applications. A technically easier variant, optical mark ecngnition, can speed data input via pencil strokes made on simple, job-specific forms.

Commonplace

The magnetically striped card is now commonplace as a method of entering personal data into cash dispensers, building access terminals and telephone boxes (beginning to appear in London). Magnetic stripes are also of course, a universal means of coding credit and bankers cards uniquely.

A particular UK success in outers. this area has been EMI's Water-It is a considerable market. mark Magnetics encoding system, said to be totally secure. Cards also now exist with inte-grated circuits built in, allowing the card not only to be debited. but programmed to do some of the work now done within machines at bank branches.

An evan more astorishing example announced recently by SRI and Drexler Corporation in the U.S. uses laser engraving to put 40m bits of data on a credit card-sized piece of plastic. Such storage capacity allows the equivalent of a dozen or so novels to be put on the card. Alternatively, the owner's "mugsobt" could be digitally encoded; the card would be made and the card would be made and the card would be seen and the card would be seen as the card. the card would be "played back" in a terminal whenever the owner had to be positively identified, perhaps to gain entry to

things as the manufacturer's meanings of the keys or some name and an exact product des- other aspect.

Keying all this in at the till is

both time consuming and prone to error, and so gradually bottles, cans and packages are being printed with special bar code labels at the manufacturing The codes are a number of spaced thick and thin lines

which can be read by a special miniature light source and photocell-a over the label by the operator. Alternatively, the code can ba scanned by laser beam. An ontput of current pulses résults which is deciphered by the associated electronics numerals which are recorded for later analysis by a computer.

In science, engineering and production, information can be collected by data loggers. These are really sampling and recording (or transmitting) systems. They can examine for example, a number of sensors and transducers at regular intervals which can be fractions of a second or many minutes. A typical application is the measurement of air pressure, temperature and wind speed/ direction at unmanned meteoro-

logical stations. The readings

can be kept on tape for physical

central point over phone lines. cosy offices but in the salesman's car. delivery man's van or on the factory and warehouse floor, has given rise to the port-

able terminal. These terminals really came into their own with the advent. of relatively cheap solid state memory occupying not much more space than a matchbox. Easily beld in the palm of tha hand they can nowadays store well over 100,000 characters.

Thus, for the salesman for example, they replace the con-ventional order book. As orders are takan they are keyed into the terminal and at the end of the working day the unit is connected via an acoustic coupler over a phone line to a central computer. In a minute or two, the band-beld unit empties its contents; then with transmission in the opposite direction, the terminal can receive new instructions or data that the salesman can see on In modern large scale retail-, the display. In some cases, new ing there is a growing need to programmes for the terminal capture more information at the can be "down loaded" from point of sale (POS)—such headquarters, changing the

installed over half the world'a units. In this country the main manufacturers are UCSL (a Unilever company), APT Electronics of Reading and a relative ewcomer, Microfin of Egham, Surrey, backed by the Department of Industry, and the

contenders including Azurdata, British Brown Boveri, Burr-Brown, and Portable Microsystems—recently a Swedish-based company Hugin, entered the market.

Notable orders

British Technology Group.

Some of the orders obtained by one or two of these companies have been notable. Tobacco spent £500,000 on equipping 100 of its salesmen with units made by APT Electronics while UCSL has scored notable successes with the Unichem pharmacenticals chain and with Gallaghers.

There are other kinds of ter-minal that allow convenient direct entry. Image Data. CTS Recognition and Quest Automaeollection or transmitted to a tion make electronic "writing pads" that allow the business activity in hand print data which is recoggeneral, the fact that data often nised by an X-Y: to ordinated is initially generated, not in grid structure under the pad. In the case of the Image Data unit. the pad can be simply touched to produce data outputs.

2.02 Cintri.

THE PERSON

Company of the work of the wor

British Rail bas bought £200,000 of the Quest units for entering time-table information into an IBM computer. The unil, called Datapad, was considered to be the only system capable of entering clean data at source. Meanwhile, one of Image Data's first orders has come from Scot-Bowyers, the West Yorkshire meat company, where it will be used for order entry.

Another system, recently introduced by Geisco (part of U.S. General Electric) allows data to be entered over a phone lime from any ordinary telephone inatrument. A small keyboard generates a different pair of tones for each character on the board and these are recognised at the receiving end for use by a computer. An acoustic coupler is used so that the telephone does not have to be rewired in any way.

And of course, if the com-puter is equipped with voice response, it can talk back over the same phone line to the cal-

Nordic states mount a challenge

CONTINUED FROM PREVIOUS PAGE

IBM not nnexpectedly domi-nates the Nordic mainframe severally estimated to enjoy well over 60 per cent by sales value. IBM and to a lesser extent the other international computer companies have so far been favoured by the tendency of Nordic buyers to go in for large, centralised computer net-

IBM has a large manufactur-ing base in Sweden which specialises in making high-speed printers, of which about 80 per cent are exported. The American group's Swedish subsidiary recorded a .1980 turnover of SKr 2.8bn (\$510m) of which half was generated by exports.

Sperry Univac, which benefited from its co-operation with Saab-Scania and which took over Datasaab's mainframe output, is the second largest supplier to the Nordie market, although Honeywell Bull has secured a 27 per cent share of the Finnish market, thanks largely to baving the Finnish conglomerate. Nokia, as its agent.

offered national resistance to the international computer electronics, which also rups a manufacturers, but had to be telecommunications bailed out by Government and in 1980 contributed sales of owned utilities in 1979. Last FM 482m (\$110m) to the group year, it was taken under the total of FM 4.6bn.

wing of Standard Electric Kirk, ITT's Danish subsidiary. In the small computer field, however, the Nordic challenge is much stronger and several companies bave started to show their musele abroad as well as on the domestic markets. The on the domestic markets. The current swift growth in small business systems, distribution processing and peripheral equipment in the Nordic area provides specialising companies international marketing.

Names which have become known outside the Nordic area over the past couple of years are Nokia of Finland, Norway's Norsk Data, Christlan Roysing from Denmark and, alongside the big new Ericsson venture in Sweden. Facit, the office machine subsidiary of Electrolux, which took over Datasaab's business computers in 1979.

Nokia produces its own minicomputers, the Mikko range, developed originally to meet the need of Kansallis-Osake-Pankic, one of Finland's leading comte. Nokia, as its agent. mercial banks, for a cash trans-In Denmark, Regnecentralen action system. The computer operation falls under Nokia

puters, has an intensive product development programme and has started marketing them through its own subsidiaries in Britain, West Germany and Sweden. Nokia is working on a teletext terminal, internal office networks and videotex systems and has gone into personal computer business with its micromikko computer.

Norway's minicomputer manufacturer, Norsk Date, has re-corded annual sales growth of more than 40 per cent over the last couple of years and expected to post a turnover of well over \$70m last year, of which about half would have been export income.

Last year, Norsk Data estimated that it would make about 700 minicomputers. It launched its third generation 32-hit machine the ND 500, which managing director, Rolf Skaar, described as "the fastest avail-

able on the market.". Christian Roysing, the Danish competitor, bas won a contract to develop the debit card net-

The company has said more taken some important Nato than 4,500 Mikko minicom orders.

The core of its business is the CR 80 minicomputer.
designed as a so-called embedded computer, i.e. to form part of a total system rather than as a shelf computer to which software can be added. Its computers are embedded in systems with ICL mainframes among others. Christian Roysing increased sales fourfold from 1975 to well over \$20m in 1980 and aimed to reach a manufacturing capacity of 1,000 computers a year by the end of 1981.

Each Nordic country has a promising microcomputer can-didate. Finland's Nokia is marketing a personal cooppiter. Sweden's alling television com-pany. Latter, has a four-lange computer subsidiary which has sold more than 15,000 personal computers. It has a turnous of around. \$13m. and expects annual increases of 50 per post. Norway's Mycron introduced.

last year a new modular 16-bit multimicroprocessor system, the Mycron 2000, which it is marketing both in Europe and work for the Danish savings the U.S. From Denmark Dansk banks but its main successes. Data Elektronik is embarked on a similar foreign marketing works for space established and wenters with the marketing works. works for space satellites and venture with its small pro-defence communications. It has fessional computer, the SFC/1.

COMPUTERS XV



Data General's Nova Four computer has useful applications for commercial environments that require both scientific functions, such as route-planning and schedule analysis, and traditional inventory control and accounting functions

Localised data networks are the minicomputer's latest offspring

Rapid communication within office or factory

TOWARDS. THE end of last tronic translator which takes the year, Computer and Systems electronic signals understood by time.

Engineering (Case), a small a computer and converts them (£12m turnover in 1980) but into the kind of signals which concentrators are available to the converts them of the converts them into the kind of signals which concentrators are available. fast-growing British electronics can be transmitted down a telecompany, offered 2.5m of its phone line]. ordinary 20p shares for sale at Telephone

The offer was oversubscribed more than 30 times, reflecting the time. The answer is to use the enlightened interest the City is showing in electronics shares these days. The success of the Case offering was further proof-if any was needed-of a new surge of enthusiasm for communications, Case's

This enthusiasm has its origin in the possibilities for greater business efficiency offered through linking com-puters and terminals of a wide variety. It has been fanned by the evolution of the new silicon technologies which make possible efficient and reliable data communications at an economic

Until now, the major use of data communications has been in large, mainframe computer systems and the large computer networks needed to run airline reservation systems or electronic mail for international banks.

With the growth of the business minicomputer, all that is months, there has been a flurry of interest in methods of fransporting data at very high speeds over very short distances. typically within the confines of a single office block or factory

Techniques

The key to the success of these local area networks, as the techniques used for this purpose have been dubbed, and other methods of commercial data communication, is relia-

bility, maintainability and cost. Data communications technology is, in general, well established. What is new is chesp communications devices that make it an economic proposition for a retailer operating a numper of sales points to combine the information from all of them and send it along a telephone line to a central computer for consolidation at the most economically favourable time; or for a company to instal televisionlike visual display terminals through which its executives can send each other memoranda whether or not the receiving station is manned.

The techniques of data communication, in fact, are all about reducing the cost of transmission. Transmission usually takes place over wires or cables, telephone or telegraph channels of lower average circuits, satellite links or in speed, dynamically allocating special cases—advanced radio methods such as cellular radio.

As Roger Evans, vice-president, marketing, for the fast growing U.S.-based communications company Micom-Borer puts it: "Any computer from the terminals attached to system supporting multiple the device are interteaved in a remote terminals does not have to be very large before the cost the telephone lines and modems exceeds the cost of the computer and terminal equip-

Telephone lines are expensive and—with most systems—un-used for a large percentage of concentrators or multiplexers, electronic devices which accept the information from several terminals and combine it in such a way that maximum use is made of the telephone network. Mr Evans gives as an example a U.S. company with a large scale nationwide data communications systems.

" The system had grown, over the years, in an unplanced manner, responding to crises, using point-to-point telephone lines to service new locations as the demands of the organisation dictated. Before long it was using more than 100,000 miles of leased telephone

"With the intelligent use of multiplexers and concentrators. the line cost savings achieved were in excess of \$50,000 a

How is this achieved? Mr Peter Burton, managing director of Case, sees data communidivided naturally into

Transmission be sees as the physical process of establishing data paths between the devices to be linked together—the telelines or satellite phone channels and their associated modems, together with the special monitoring equipment necessary to ensure that a net-

work is performing to capacity. Transnort he defines as the technologies necessary to provide multiplexing and switching facilities: "A data transmission network consisting of telephone circuits and modems alone is expensive and inflexible. Because of the high cost of circuits, means must be found to allow several data links to share each of the circuits. Also, it is becoming increasingly necessary to provide a means of switching the data links to match users needs just as telephone callers are switched

Two of the most powerful techniques devised to solve these problems are "statistical and switching."

to their destination by a tele-

The statistical multiplexer (or statmux as it is inelegantly called in the business) divides a data channel into two or more speed, dynamically allocating channel space according to demand in order to maximise data throughput at all times.

The statmux is a time division multiplexer; the streams of electronic pulses coming in from the terminals attached to synchroaised manner so that the receiving statmux knows from where each pulse has come and where it is to be sent. And it selects which of the ent."

available outgoing telephone
[A modem is simply an election lines can best handle the out-

ally those brought up on conventional data processing. Case publishes and distributes and

excellent introduction by Peter

Communications,

Liicom-Borer has published

for Minicomputer Users by

Roger Evans. Both are recom

mended. After that, it's back

Alan Cane

to the textbooks.

notes from its introductory seminar Data Communications

Burtoo, Pocket Book of Com

from a range of companies including Olivetti, Burroughs, Case, Network Technology, Timeplex, Racal, IBM. 1TT, Menzies Communications Services and Philips Data Systems. The newest machines are

cheap enough to be considered even by the first timer. Timeplex, a U.S. company with a leading position in mutiplexing. pointed out in lauoching its E-series: "The lower tier market is characterised by users of small to medium sized minicomputers with remote, asynchronous (Stop-start) terminals. These users are new to multiplexing and overall cost rather than network sophistication is the determining factor in equipment selection."

"It costs £1,660 a year for a dedicated line of 50 miles, £4,500 a month for a line extending 300 miles and beyond. With the E-series multiplexer costing as little as £975, it pays for itself in a very short time."

Switching

Packet switching is another method by which information can be switched through a net work and where inform originating from more than one source can share the same cir-The stream of electronic pulses is divided into groups or ackets each with an agreed format comprising identifier. address, message and tail, and released on to the network.

It is the job of the network computers to route the packets to their destination by the most cost effective route, taking into account line failures and so on. Most European telecommuni-

cations administrations are now establishing national packet switched data networks. The impetus was provided by Euronet, a packet switched network set up to provide a means for scientists and technologists to gain access to the large computer-based data banks. Diane (Direct Information Access Net work-Europe) is the EECsponsored information service that uses Euronet as its commu-nication vehicle.

The world-wide banking network. Swift, is also a packet switched network.

If, however, there is a need to transfer very large amounts of information very quickly from one place to another, one answer is the Tesdata Hyper-channel. This runs at the prodigious speed of 50 megabits

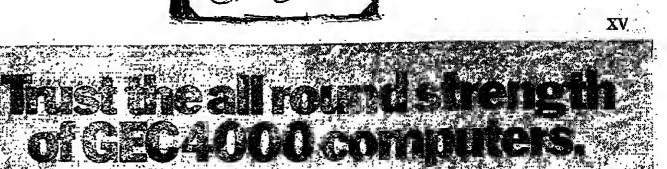
second-that is, 50m individual electronic pulses a second or roughly fast enough to send 12 average novels from one point to another in one second. The Hyperchannel is now available for IBM, Univac, Honeywell Modcomp, DEC, CDC, Tandem, General, Perkin Elmer and SEL

equipment. Data communications is just beginning its principal growth phase. No company making good detacomms products should bave less than a full order book

for the foreseeable future. Note: data communications is



T-Bar has combined the power of the microcomputer with easily-understood programme commands to execute line-access and switching functions. Above, the T-Bar Mass + systems for accessing, monitoring and reconfiguration of on-line data communications networks



GEC Computers occitive a unique position in computer firstly Our roots go back even before the time of Charles Babbac factative of the Computer. (Ger prodecessors actually supplied him with electrical equipment for his experiments).

Thinwith electrical equipment for rus experiments).

Today, computing power has become as vitat a resource as all in maintaining Britain's economic well-being, GEC Computers. To maintaining Britain's economic well-being, GEC Computers. To maintaining GEC 4000 Spires. Built to high performance standards with excellent reliability and ease of maintainance, it effers a 9 language capability with Noticles is GEC Computers award-winning real-time.

Any of the season of COMPUTER award-winning real-time.

secutive, it means GEC 4000 computers are very fast, very secure and — because it's a hardware system with lower overheads than a software equivalent — very cost effective.

The GEC 4000 means business.

Designed for general purpose use, the GEC 4000 has been developed to meet operating requirements often hostile to computers, such as steel works and power stations. All GEC 4000 computers have upwards software compassimity, multimeans you're never less nignand ory with one or out machines. Existing users can purchase more powerful computers in the range knowing their investment is secure in the future.

The GEC 4000 communicates.

The power behind Prestel* in eight countries; the GEC 4000 is the answer to viewdata system demands. Viewdata. requires fast reliable responses to a large number of simultaneous users. That's the GEC 4000. It also requires the capability to run continuously for long periods without supervision.
That's the GEC 4000 again,

Scientific applications of the GEC 4000.

with a spectrum of activity varying from particle accelerate

Rutherford Laboratory has twenty GEC 4080 computers

experiments to laser applications, brindelton, prior GEC 40002 are located in impressities around the country providing India active computing facilities. At the Science Research Council's Children Laboratory for example, a died-funked GEC 4080 system performs important functions resolutions a laboratory s. 4000 torse, 25 metre radiotelescope.

The GEC 4000 in defence.

Defence compiliers have to take the rough with the smooth. And it's mostly rough. Out in all weathers, climates and environments, driven hard and last, the GEC 4000 is comprehensively ruggedized to come this ugh with flying colours. That is why Wavel!—the Easts command and control system for the British Army—has GEC 4000 series central processing equipment. You'll also find GEC 4000M computers for bussion system autorics than high with the PAS is a state of the processing equipment.

for mission system avionics flying high with the RAE in Airborne Early Warning Nimrods.

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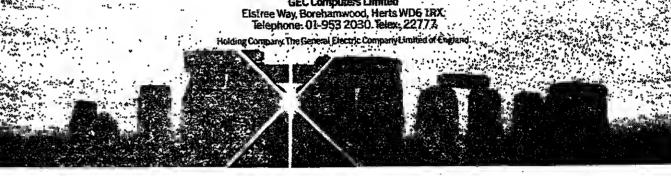
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COMPUTERS XVI

Memory capacity goes on increasing at a phenomenal rate. David Churchill traces how.

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Which Computer? Show

INFORMATION generated by sized flexible disc of 8 inches. computers has to be stored. Within the next two to three years, according to market esti-mates, over half the 4m or so otherwise much of the effectiveness of the technology is lost. Not surprisingly, therefore, the flexible discs sold world-wide development of computer could be mini-discs. memory systems has gone hand

Apart from discs, one other in hand with the rapid strides in important magnetic memory storage system is provided by tape cassette very similar in In the 1950s, when computers appearance to the casettes used for conventional audio recordas we know them today were almost archaic in comparison, ing. The major difference, howvarious systems were used to ever, is in the electronics which control the flow of information methods ranged from punched paper tapes to electric vacuum to the computer. For the user of the home computer, or the small businessman with one of It soon became clear, however, the very low-priced micro-comthat such systems were limited puters, the ordinary cassette system will suffice until they in their usefulness and so the industry turned to other forms can aspire to a floppy disc of data storage. Magnetic-based

past few decades.

information,

gology has proved the fastest

The basic magnetic memories

were magnetic core systems, consisting of tiny ring magnets threaded by control wires which

re to be stored. Over the past

10 years or so, tha size of such

shrunk considerably. But they

still remain relatively bulky.

slow and expensive and are now

The main thrust of magnetic

nemory systems has been in

drum tapes and disc systems. Drum storage, achieved with cylindrical drums which re-volve at very high speeds, are

still used for large computing

systems because they have very low error rates, although they

However, with the miniatur-

isation of computer systems, has grown the popularity of both rigid and flexible disc

storage systems. These discs.

which are like a record with information stored magnetically

and scanned by moving re-

cording heads, offer substan-

tial storage of information. In the mid 1960s, for ex-

ample, a rigid disc could hold

square inch; now the storage capacity is over 7.5m bytes to the square inch and by 1990

this could rise to 100m bytes to

This considerably greater

storage capacity has been

achieved by cramming more

(the equivalent of the groove

on a record) and by squeezing the lines closer together.

ally spread into two types, rigid and flexible. Rigid discs

are aluminium discs coated with

oxide and ahout 14 inches in

diameter. There are about 40

or so compaoies that produce them, mainly in the U.S., and

IBM is generally regarded as

having the lead in the appro-

priate technology. The total market for rigid discs is well in excess of \$4bn a year accord-

ing to market estimates.

The flexible—or "floppy"—
discs are the expanding sector
of the market. The discs are

created hy coating a flexible oxide onto a nylon disc. These have a much lower storage

capacity than a rigid disc hut

are a fairly cheap and robust

The disc systems are basic-

100.000 bytes to the

are still relatively expensive.

storage applications.

Thrust

growth area.

system at least. memory systems soon became widespread and are still an important part of the data storage market today, although the growth of silicon chip tech-The chief threat to dominance of the magnetic disc systems will come from semiconductor memories which have developed in line with the phenomenal growth of silicon chip technology over tha past decade. Such semi-conductor memories had just under a fifth of the total memory market by the late 1970s, and are estimated to take nearly a quarter by the mid 1980s.

magnetise and demagnetise tbem according to the pattern of "ones" and "zeroes" which The growth in chip storage systems is shown by the fact magnetic core memories has that it was only a few years ago that the micro-electronics industry was hailing as a significant achievement the ability to make only used in a minority of chips with a storage capacity of just under 5,000 bytes. Nowadays, chips that can store over 65,000 bytes are commonplace.

There are a wide variety of semicooductor memories on the market, mainly from U.S. and Japanese manufacturers, Each particular memory system is usually geared to a specific computer application.

One of the largest sectors of the market are random access memories, which are hroadly divided into two types static and dynamic memorles. Dynamic devices can be made more cheaply and have greater capacity than their static counterparts. However, dynamic memories have the disadvantage that they require special additional circuitry to ensure that information stored within them is not lost within a few seconds.

But, like all random access memories, there is the problem of retaining data when the power is switched off.

To counter this problem, maoufacturers have developed "read-only memories" which do not lose information when

> With electronic funds transfer banking takes another big step

Towards the 'cashless society'

THE BANKS and the financial vocably to the development of large computers. When IBM large computers. When IBM launched the first of its very big new machines, the 3081, two years ago, it was significant that the banks were the first in line to place orders for these computers which are able to cess instructions at a rate of

storage system.

Market estimates indicate
that over 1m flexible discs are about 10m a second. The UK's first 3081 was installed at National Westminster Bank's Goodmans Fields site being sold a year and the market is growing rapidly. This de-mand has been helped by the growing market for word prolast August. The banks need computing power of this kind to run a whole range of automated services, from cheque clearing to "through-the-wall" cash dispersers. Now they are beginning to look at the potential of smaller computers and computers has dispersed systems. cessing systems. Most word processors use small flexible discs just over 5 inches in size, compared with the "normal" computer-based systems.

These smaller machines can provide counter services, in-formation on the desk top for the banking executive and speedier inter hank clearing. The banks have to provide

new and attractive services, but in a way which adds little to their costs in staff or real

Mr Robert Lipp, senior executive vice-president of Chemical Bapk, told a conference late last year: "We in the banking industry must work aggressively to ensure the continuance of our dominant position in the payment system arena of the future. Failure to do this may well leave us stripped of the most profitable segment of the retail market, and, to make matters worse, saddled with the most expensive and outmoded delivery system in the market!"
Faced with this prospect, the hanks are not sitting still. In lact, only weeks ago, Chemical Bank (which is one of the largest New York banks) introduced formally a new service

called ChemLink Described as an international computer-based cash management system, ChemLank runs on the largest and most powerful computer bureau network com-

mercially available, the Mark III service provided by Geisco. Geisco, the computer services arm of the General Electric Company of the U.S., has three the U.S. and ooe in Holland, to

link its users in some 26

CONTINUED ON NEXT PAGE

offered its customers access to the Mark III network through a simple computer terminal installed in the customer's office and linked to the nearest network access point by telephone.

The significance of the new service offered by Chemical Bank in collaboration with Gelsco is that banking facilities can now be offered to corporate clients on the same basis - a company can carry out a signifi-cant proportion of its banking from its own offices using a computer terminal which can be as simple or as elaborate as

Principle

The ChemLink system deve-loped in the U.S. out of necessity (the McFadden Act prevents U.S. baoks from providing com-mercial banking services in more than one state! but it embodies a principle which is going increasinely to shape banking at a corporate and personal level: the principle of making the customer do more of the work. This can only be achieved by the use of computer-based tech-

According to Chemical Bank, for example, "Within two hours of money entering or leaving an account with Chemical Bank in London, the transaction can be reported by ChemLink in detail. The same is true of many transactions on New York accounts
. . . No other system currently

operating approaches the speed of reporting provided by Chem-Link." Prohably true, but, for how long? All the major hanks are working on ChemLink-type systems and will announce them in due course.

The hanks have traditionally bought their mainframe computers from IBM-which has the lion's share of the banking market in this country. Bur-roughs and NCR. Other manufacturers, Philips, Olivetti, Data-Saah and so on have made their marks in specific areas. But with the development of microcomputer based systems, a whole

new range of companies has moved into the financial arena. Fortropio, for example, is a comparatively small company hased in Dunfermline, Fife. which has achieved a growing reputation for financial terminals hased on its work with traditionally Barclays Bank in an experiment

Staff produce technical reports at the word processing centre of Ferranti's Edinburgh offices, using the Xerox 850 with 24 - character display units

power is removed from the

Further developments memory systems in the 1980s are likely to come from mag-netic bubble memories—solid atate devices in which the data is stored and controlled mag-netically. Although bubble memories are still a relatively expensive form of data storage the price is expected to fall quickly. Other new systems could also

system.

come from applying optical video-disc systems to data storage. Such video-discs already have a storage capacity equivalent to the theoretical limit achieved by magnetic discs, although there are a

number of poteotial drawbacks. However, it remains certain that by the end of this decade data storage systems will have made technology gains similar to the advances over the past TELE-LINK ARCHIVES LIMITED FOR SECURE STORAGE OF ALL MAGNETIC MEDIA

A CONTROLLED ENVIRONMENT

Harry Co.

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deaf and rather dumb-capable of doing relatively simple tasks

of doing relatively simple takes which have to be programmed into the machines' memories. The robots will not deviate from

their orders until a new pro-gramme is placed in its elec-

tronic memory.

Researchers throughout the

world are trying, however, to develop computers and robots

following strictly to the pro-

grams stored within the elec-

of making robots more flexible

large area of research revolves

around the development of

robots which can identify one

particular component among

many different items, pick it up

relatively simple joh for a human, are enormous. The robot

must be able to see-using some

form of camera linked to its

computer control system—and

identify one component from

several angles, let alone differentiate between different

carried out in a number of re-

search centres worldwide in-

cluding Edinhurgh University in

the UK and Stanford University

in the U.S. At Edinburgh, re-

searchers produced a system

which could identify the various

parts of a toy tractor and

components.

The difficulties in doing this

and place it where needed.

The work on artificial intelli-

tronic memory.

Elaine Williams discusses new work on artificial intelligence

Robots that talk and listen

A finance communication system (right), the IBM 4700 provides banks, building societies and other financial institutions with a family of compact computer devices for front and back-office operations. The system legitores a-range of compact ter minals to allow staff to process immactions quickly. The 4700 system quickly The 4700 system is compatible with the IBM 3600 series of finance industry products and arms to offer improved performance and larger main storage

Cashless society

CONTINUED: FROM PREVIOUS PAGE

the point of sale. opened to manufacturers of at least, for reader/sorters, huge microcomputers and devices costly computer-based machines telephones into viewdata sys ings on cheques and sort them tems. Just as Chemical Bank into their respective piles for and its competitors are looking clearance.
to provide banking services to These n their corporate customers in up to 2,000 cheques a minute.

ning to provide banking services

to their private customers in

their homes. All that is needed is a device to display information, the domestic television set, for example, and a keyboard so that messages can be sent to the bank's computer. It also requires a stiff system of passwords for security and a certain

Citibank, Chase Manhattan, banks have trials running in home banking using personal equipment to run the new computers as the communication device. German banks are running a home banking service. over the German viewdata syspioneer here was Verbraucher Bank of Hamburg, whose dataprocessing staff wrote the neces. National Westminster has sary anothware to enable its cus. already bought its first five of their accounts, make simple payments and so on.

still under wraps, all the banks funds transfer, the substitution are active in this field, experi- of the movement of electrons menting with systems provided down a telephone line for the by viewdata experts such as movement of bits of paper.

in electronic funds transfer at Rediffusion computers: the point of sale. IBM has traditionally domi- Services (BACS) is an early The door has also been nated the market, in this country example; the organisation which convert televisions and able to read the magnetic mark-

These machines can process their offices, so they are plan- National Westminster, at its Goodmans Field site, has 14 IBM 3890 reader/sorters all linked to whichever of the array of mainframes is controlling the clearing operation. A day's burden of cheques can be cleared in six passes through these machines.

Automation

This year, all the clearing degree of trust in the system. banks are changing to automated worth some £10m a year, for the system. Apart from the traditional suppliers, specialist Late last year the clearing optical recognition equipment banks announced they had companies such as Recognition agreed on a formula to protem. Bildschirmtext. The Equipment and OCR Scandata are expected to feature strongly in the competition. Indeed Westminster has National tomers to investigate the state credit clearing reader / sorters from Recognition Equipment.

· But hanks need computers In the UK, while plans are most urgently for electronic

Bankers Automated Clearing example; the organisation accepts magnetic tapes bearing, for example, details of salary payments and prepares new tapes to be sent to the appro-priate banks containing the

Swift the Society for Worldwide Interbank Financial Telecommunications, now has over 800 member banks in 26 countries. It is a computer-based network that represents electronic funds transfer on a grand scale. Messages are sent from hank to bank at high speed but at the most economic cost through the use of a technique called packet switching.

pected to go live soon.

ceed with electronic funds transfer at the point of sale—the

of special terminals and communications systems to link puters. A whole new chapter in the history of banking and computers is beginning to

ecessary details.

On a smaller scale, CHIPS provides New York banks with the means of handling international interbank dollar trans-Citibank, Chase Manhattan, clearing of credits, and a whole fers. Last year it moved to Chemical Bank and other U.S. new market has opened up, same day settlement. The UK equivalent, CHIPS, based on Tandem minicomputers is ex-

> society." It will mean the development.

the terminals to the banks' com-

Alan Cane

SCIENCE FICTION writers mitted themselves to the have long produced tales about equivalent of \$400m over the human-like robots, capable of next 10 years for the development of the deve coherent speech and rational ment of fifth generation comthought. The idea began with Karel Capek, the Czech writer, in the 1920s who first coined the puter systems which will em-body many features of the Expert system.

word robot to describe sinister thumanold machines in a stage play and continues with the system developed in the U.S. eccentric, but rather more called MYCIN which is an lovable robot characters of R2D2 and CP30, found in the interactive system that simulates a medical consultant specialising in infectious film "Star Wars."
In reality, robots are blind,

A use for GPs

It engages in question and answer conversation with doctors needing specialist help and in three quarters of the cases gives the same advice as a human expert.

The doctor can ask for help on the identification of microorganisms and the prescription which can convene in human speech and be capable of learn-ing by experience instead of antibiotics and also for explanation why it has given cer-tain advice. Humans can also improve the computer's knowledge by telling it shout relevant knowledge they realise is missing in the program.

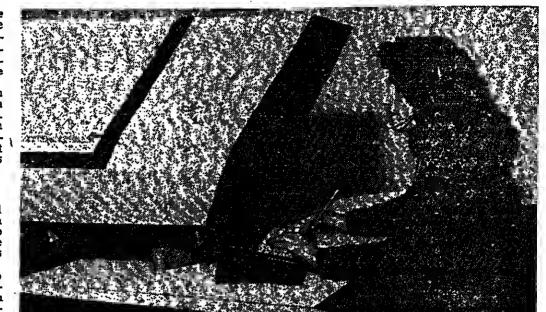
gence is being tackled on both Hence a program like MYCIN the hardware and software fronts. As regards hardware, researchers are looking at ways does · contain elements of artificial intelligence because it allows the computer to learn and to explain itself instead of in operation. For example, a producing streams of information which have to be interpreted by humans which is the most common way in which computers work today.

By comparison with the work on artificial intelligence, progress on producing machines which can understand speech and reply is much more

Many companies are working on the problems of speech synthesis and recognition and include ITT Semiconductors, General Instruments, National Semiconductor and Texas Semiconductor Instruments.

Known as "pick and place" robots experiments are being Texas Instruments was among the first to bring ont a consumer product using techniques for speech synthesis. This was the well-known "Speak and Spell" toy which had all the circuitry squeezed onto silicon chips. There are a number of elec-tronic chess games which also employ speech synthesis.

But if artificial intelligence Work on speech synthesis is is to emerge, the way in which divided into two areas. They are recognition, which tries to understand what is being said computers are designed and programmed, has to be altered. A step towards this has been the emergence of Expert systems—which looks to be a and synthesis where a computer "talks" using speech informamajor area of interest in 1982. The Japanese alone have com-



A computer-aided-design system featuring voice control to speed operation and givo more command flexibility has been introduced by Calma, a leading supplier of computer-sided design and manufacturing (CAD/CAM) systems to the microelectronics industry. The voice-control unit, which can hold over 50 words and can be "trained" in any language, gives the Calma system a command input rate significantly higher than with conventional systems, and demonstrations have already shown substantial productivity improvements in the design and redesign of complex integrated circuits.

The voice-control unit is supplied as an option on Calma's recently introduced vector memory display, and enables the operator (above) to take full advantage of the system's high processing speed and internal computing power. The local processing capability of the vector memory display frees the central pro-cessor from the hurden of continuously refreshing the display screen and allows complex interactive functions to be carried out by single commands, and the addition of voice control allows these commands to be made without the need for a keyboard, light pen or menu display.

coding systems used in telecommunications but companies systems to switch on remotely believe that there are numerous down the telephone line. applications ranging from the rather frivolous such as speaking clocks to more serious ones in industry to warn operators monitoring complex dangerous processes.

One of the most promising areas of research is simed at telecommunications and computing applications. Companies such as Bell Northern Research and British Telecom are looking at ways in which speech recognition and synthesis can he

example, British Telecoms' research laboratory helieves that the techniques could be used for man-machine communication using voice input over the telephone lines.

speech synthesis were in voice punching numbers on a keypad to ordering central heating

> To reproduce electrically human speech researchers have had to study closely the system of sound reproduction which comprises four basic elementsthe lungs, the vocal cords, the articulators (tongue, lips, jaw and palate) and the brain which co-ordinates everything.

Sound is simply expelled air which is altered by the articulators to produce the variety of noises which make up human speech. Two basic techniques are

used to produce speech. One is called the formant method; the other is the linear predictive coding. In simple terms linear pre-

dictive coding tries to reproduce tion stored in its memory. Commands range from asking the shape of waveform of the The earliest application for for Prestel pages instead of sound produced while the

formant method looks at the frequency and amplitude of the component sounds.
In November, Logica the UK

software company, announced Logos a research tool claimed to belp the development of speech recognition systems. Based on the work of the Government Joint Speech Research. it analyses whole words in a way which is not sensitive to the speed at which a word is

Each word is analysed by breaking up the speech fre-quency into 19 narrow bands and looking at the energy of the sound uttered. The result is stored as a pattern of black dots called frames to which the device can compare against other spoken words.

Logica says that Logos is capable of learning 2,000 words and can recognise several hundred in one scan.

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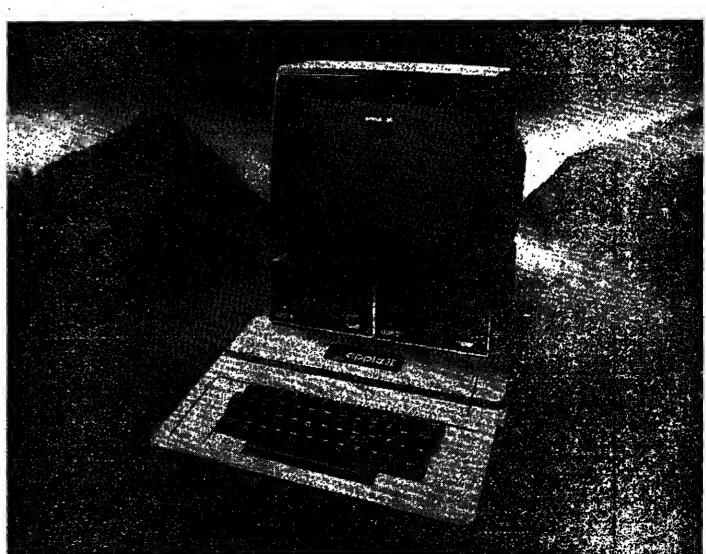
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Despite doubts over privacy, microcomputer advances have aroused more interest among doctors. Jason Crisp reports

Patient progress in the medical world

UNTIL RECENTLY most of the microcomputer industry has are becoming available—often an enthusiasm for computers payroll and word processing. medical profession appeared fairly immune to computers. But io increasing the interest of the or by established computer com- software. But as an extensive the falling cost of micro- medical profession. The moun-panies and software houses in computers has begun to produce tains of paper work, records conjunction with the medical a modest use of them in hostalls and some general practices; and interest and awareness in them has grown rapidly.

According to Dr John Dawson, head of the professional and scientific division at the British Medical Associstion, there is still considerable resistance within the mainstream of the National Health Service to computers being shown by general puters. "I think it is because practitioners. He estimates that the people who have controlled computing have been unable to two thirds of GPs had considered get away from the idea of having mainframes."

medical profession. The mounand analysis are a natural enough area to benefit from computerisation. The obstacles have included a lack of suitable software, financial, privacy and the attitudes of doctors them-

Attitudes are changing. Dr Dawson says there is now a "massive interest" in comby the end of 1981 as many as using computers in some way.

Considerably more computer The recent growth in the programs for general practice

been particularly instrumental written by enthusiastic doctors and usually writing their own panies and software houses in profession. The micro-computer also gives doctors the privacy which they would not be confi dent of having if the work was being processed on a mainframe at another location.

A prediction

Eighteen months ago when the Royal College of General Practitioners predicted in a report that computers would be in widespread use in general practice within five years there were hardly any using them. Those who did were GPs with

by Scicon found: "Most GPs have no wish to learn how to program a computer."

'A' number of commercial systems are now available for GPs from specialist companies like Abies Informatics and General Practitioner Computer Systems and also from estab-lished computer software houses

Most systems at present con-centrate on the administration the practice. Facilities include an age/sex register of patients sometimes with an automatie recall, repeat prescriptions, drug stock control,

Some systems being developed will tell a doctor prescribing for contra-indications and whether it will inferact with another drug elready prescribed.

Systems of the future are likely to help a GP make a better diagnosis. Already a pilot system is being tried by the U.S. Navy in nuclear submarines (which don't have a doctor aboard) to diagnose

The Scicon study for the BMA also saw a development in Encounter Systems, in which brief notes are made of consultations with each patient. It could be used to appalyse recent tastory, particular and the workload of the GPs.

Seven sold

The complete computerisa-tion of clinical records is still seen as rathar futuristic and fraught with problems and having a considerable effect on the way doctors work. The cost of transferring information from manual records and the memory to store it would be prohibitive at present.

Microcomputers are also being used within hospitals in a wide range of individual applications but usually only where individuals have been particularly enthusiastic.

But the potential market in

problems within the local popular hospitals is being looked at medicine in the US lation, trends in patient health carefully by a number of combrought a rapid introduction puter manufacturers. Last year computers because of a new joint venture company importance of detailed items. a new joint venture company was formed between BOCs billing. Computer Service subsidiary Mr R

and the U.S. company Shared Medical Systems, with an initial capital of £2m. Since its formation it has sold seven patient administra-tion systems to the National Health Service and also a system to the private Cromwell hospital. The systems cost typically between £60,000 and

£100,000 and run on Digita, Equipment mini computers.
Shared Medical Systems has supplied information systems to over 500 hospitals in tha U.S.

Mr Roger Wallhouse, de managing director of the inventure in the UK-Brit Medical Data Systems and there has been a strong rise in demand for computer sy in hospitals in the last quarter of 1981

Applications of computers in hospital vary greatly from administrative systemsmanagement of bed occupancy, waiting lists, nursing -to medical analysis of a number of tests, such as electro-

Pre

Demands for complex weapon systems stimulate the computer industry.

Defence needs aid technological progress

speen, and still is, a highspending area of government
activity and it has been traditionally one of the very few
areas (space research is
another) in which the so-called
"frontiers of technology" have
been consistently pushed forinvolved several trillion com-

Demands for ever more complex weapons systems, such as guided missiles and aircraft, have in turn generated new problems calling for new techniques to solve them. Money for such defence-related activities has not been in short supply in the past few decades. and it is probable that some of the most advanced uses of com-puter technology to be found anywhere in the world are now being employed in the various scientific and other research establishments of not only the Western bot also the Soviet world. Many of these uses are still secret but in time they will percolate through to everyday

In space research it is tricity in terms of the potential

THE WORLD'S aviation and certain that the problems defence industries have for involved in putting men on many years been at the spearhead of the development of computer technology—and for one simple reason. Defence has surfaces of distant planets across literally billions of space, could never involved several trillion computer calculations to ensure the safe functioning of every aspect of the mission.

The traditional use of computers for aclving abstruse mathematical and other problems in the aircraft, aaroengine and guided weapons industries is now being extended by the employment of computers as specific tools in their own right. Computer-aided-design (CAD) and Computer - aided - manufacturing (CAM) are phrases increasingly beard in those industries. especially in association with computer graphics—the use of computers to create and modify as "dynamic analysis," in which pictures on cathode ray screens. Computer graphics have been compared to elec-

magnitude of their effects, upon society, but already they are revolutionistional functions aerospace industry.

It is now possible, for example, by using computer graphics, for an aircraft designer to build up a three-dimensional picture on a cathode ray screen of what an aircraft (or other product) visible manifestation of his initial design concept, the designer can see at once what needs to be changed to achieve his desired objective, and it is possible to make many hundreds of changes at considerable speed. The computer-controlled system can then move on to parts drawing, then to metal cutting and parts fabrication, with greater speed and less waste, and hence considerably greater overall efficiency.

Variations on the use of computer graphics in aircraft design include what is known complex computer programs can be written to provide a picture of something that hitherto had to be provided in model form. It is possible, for example, to show by means of computer graphics what the stresses will be on the airframe in a particular aircraft design, or to see what the airflow effects ing a model and testing it in a wind tunnel. In this way millions of calculations can be made in a few hours, obviating the necessity for actually constructing fatigue and static test specimens, or models for a wind

It has been suggested, for example, that carried to its lògical conclusion, "dynamic analysis" will eventually re-place the wind tunnel entirely as a designer's tool, making the tunnel as archaic in aerospace design as Stephenson's Rocket is to the locomotive industry of today. Virtually every major items like inventory control, aerospace manufacturer in the and other computations, calcu-



Honeywell Level 6 computers which form part of the Whitehall Defence Communications Centre's automatic message routing and distribution system.

world is now making some use of computer graphics, and as the capabilities of this new tool become more widely understood the benefits will spread.

Aviation and aerospace are also leading the way in the use of CAM, in which virtually every process of manufacture, from initial materials ordering through to metal cutting, final assembly and shipment of the finished goods, is controlled by computer to save time, effort, cathode ray tube displays conmoney. Messerschmitt-Bolkow-Blohm in West Germany, for example, is using CAM to assemble wing sections of the Tornado multi-role combat aircraft

In civil sviation, the comparatively simple use of com-puters in alrline seatreservations systems has been progressively extended, until today the computer is as indispensable a tool in running an airline as the aircraft them-

lating flight schedules, crew training (through increasingly sophisticated flight simulation techniques), and more recently, fuel management systems that can direct aircraft through on. .. board computers to fly the most economical paths through the sky from take-off to touch-down.

Even the flight decks of airliners themselves are about to undergo a radical transforma- : tion, with the old galaxy of veying all the necessary information of such things as height, altitude speed direction fue state, systems functioning and so on in the simplest possible form, to make the pilot's task

easier. In virtually every field, CAD and CAM makes the traditional design and management tasks easier, more flexible and more economic. They have already resulted in a sharp acceleration in the rate of growth of aerospace technology, and this seems likely to continue in the future.

Michael Donne

Indicative of the medical profession's growing interest in computer aids, pictured

above is a CBM PET computer with printer and dual drive floppy disc being used

in a medical environment

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Geoffrey Charlish on aids that cut down industrial costs

Computerised process controls are being increasingly used throughout industry. Above: the control room in the nuclear fuel reprocessing plant at Tokaimura, north-east of Tokyo. Safety is a key factor and

surveillance my st be constant

Preparing for a new breed of production engineers

churning ont everything from

white collar workforces have the so can the programmable usually been more amount to arm change and the jobs they do are agnificantly easier to computerise. After all, customer duct computer controlled handecounting, salary administrawind the rest are much the

same everywhere.
Manifecturing is different. It involves everything from engineering design through the production process itself to final testing and packaging As a result, computer application has been piecemeal and any existing commercial computer

has been unlikely to participate. Thus, the chief executive's vision of a centrally-controlled: plant that has raw materials

prominent. Indeed, in semihuman, in any case, would be able to perform the testing

But in industries that are assembly-dominated the problem is at its worst because of the variability. The products are all different. Mechanisation has been pre-occupying these industries for a century or more and endless ingenuity was evident long before the compnter came on the scene.

Now however, micropro-cessors are applying intelligence to purpose-built machines and tester equipment. Results that were being obtained by complex mechanisms and relays are now being improved upon and cost reduced by micros and new

sensor technology.
Furthermore, much greater product variability can be accommodated because the changes can oftan be made, not by electromechanical re-figging but by re-programming the micro from a keypad.

Each industry will continue to have its purpose-built as Fischer and Porter. Babcock-assembly machinery but it is changing significantly as a new. Kent Brown-Boveri; Rosemount breed of production engineers moves up this new learning house. They are all chasiog the

gas bills to bank statements as the robot, has made the generation industries. have generally appracted more beadlines. Its main advantage interest, and certainly more is its versatility: just as the investment, than any production human hand can pick up and place accurately any object within its size weight capacity.

> match some of the single pro-duct computer-controlled handling and assembly machines found in say, the cigarette industry, or in the actomatic assembly of electronic com-ponents on to printed circuit boards.

However, before long the arms will become real robots thing be wants about the state with eyes several groups are of the process. He can call up working on this coocept in the UK alone. Robots will have pattern recognition and learning / deductive ability. Soon, they will be able to move about entering at one end and on the factory floor, too, and finished products coming out their skills will extend beyond of the other, is still quita a such operations as welding, way off. spray painting and polishing.
The nearest approach has Working in groups, they will been in the petro-chemical be able to carry out comindustries, although the elect plete manufacturing and test tronics industry itself has been sequences, passing parts to each other.

facturing systems (FMS) are a step along the way. In a machine shop they are ahla to pick parts and cutting tools to computer controlled machining ceotres in continuous productioo.

Sophistication

The machine tools themselves and their controlling computers are also reaching new levels of sophistication. In a recently introduced machine, from Fanuc in Japao, parts can be "constructed" on a screen and when the operator is satisfied with the "drawing" a button is pressed for high speed repetitive turning from bar stock. Eventually, such machioes will be linked directly to CAD systems.

In process control, pasically concerned with fluids moving in and out of vessels and along pipes, automation is the rule rather than the exception. The market contains companies such Taylor Sybron and Westingbig users in the oil, petro-

Of late, the programmable chemical, hrewing, beverage, ment is bought by the semi-arm, now generally referred to food, pharmaceutical and power conductor companies; elec-

In all these company's systems, the computer, on a continuous hasis, examines temperature, pressure, flow rate, valve status, pump spaed and decides what it must do to optimise the process and con-tinually sends signals back to the heaters, pumps and other controlling devices to keep the process in specification.

Nowadays, these systems allow the process engineer to design the control scheme on a colour TV screen and the process operator to see almost anycoloured graphs, har charts aod trend curves and can view mimic diagrams of the plant itself with constantly updated numerical data for each vessel, pipe, pump or valve.

Process cootrol is one of the few areas in which design of the product is integrated with its production control in tha

The mechanical engineering include Engineering Research Association in which the engineer keys in the basic shape and dimension details and the computer makes a drawing on the VDU

It then goes through a reverse evolution process to arrive back at the condition of supply of tha metal blank, detailing the turning or grinding operations that will be needed to produce the part. It will list, on the drawing, tasks to be allocated to the available machine tools, allo-cate cutting tools and will even. produce a time and cost esti-mate if needed.

After the product has been made, it has to be tested. Most of the effort has been needed the electronics industry itself because, since the intro-duction of the integrated circuit in the '60s, manual testing has either become impossibly expensive, or in some cases humanly impossible (the micro-processor cbip, for example).

So a worldwide \$1bo business has grown up in the three main areas of IC and discrete component, printed board, and complete system testing. Most of the component-testing equipconductor companies; elec-trooic system and equipment makers nowadays expect to obtaio good chips and most of their problems lie in testing the boards. The later they find the fault the more expensive it becomes - the pecalty can be several handred times bisser it faults are present in products newly delivered to the cus-

Much effort has been put into board testing so that, in modern equipment a "bed of nails" multi-contact fixture descends on the PCB and a computer tests all the companents and interconnections

Indispensable

Such machines are roughly in the £50,000 to £100,000 price bracket, but are virtually indispensable to the larger electronic equipment manufac-

Worldwide, GenRad of Massachusetts bas the lioo's share of the board tester market. Computer The mechanical engineering include Teradyne. Computer iodustries are working towards Automation. Hewlett Packard this too. For example, a system and Fluke. Io Britain, Memcalled PADDS bas been de- brain and Marconi Instruments veloped at the Productioo are lead houses, although the former is part of the Schlumberger group.

> - aviation electronics is a good example — often involves stringing togeher a number of specialised measuring instruments which are theo put through a set pattern by a computer. Hewlett Packard bas scored well in this area because transmission method devised for coonecting the instruments together was adapted five years ago as a standard in the U.S. and is now widely osed throughout the world (e.g. the IEEE 488 bus). System test bolds the biggest market sbare in autotest, mainly due to U.S. and European military influence.

Computers are being increas-ingly applied in other manufacturing areas such as packaging and materials storage and several of the computer makers offer shop floor systems that look after work in progress, management, input and materials.

Eventually, all the systems will work together. But not just





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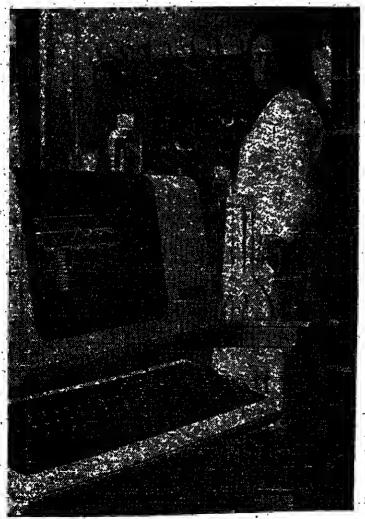
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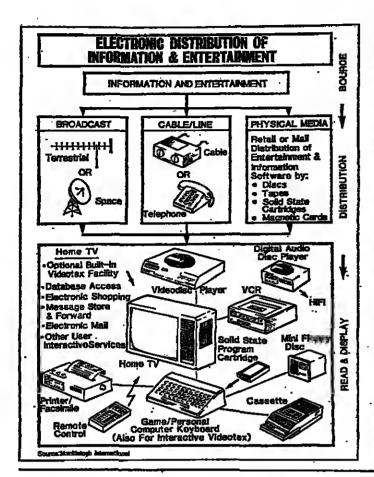
Digital computers are used extensively in laboratory applications (left); a computer-based data acquisition system (right) from Base Ten forms part of a test system for commercial vehicles manufactured by Leyland. Base Ten has also supplied a data-



conversion system to Leyland, together with a software package to produce half-inch 9-track computer tapes, suitable for analysis on Leyland's GEC 40-82 computer

Michael Dixon examines the prospects for computer-assisted learning in the schools

Making the classroom a livelier place



THE LONG - NEGLECTED customers of the education service—children whose intelligences run in directions other than the conventionally academic—have at last found a political champion. He is Sir Koith Joseph, Secretary for Education and Science, and his concern for these pupils borders on educational

Only the other day, for instance, he went beyond merely doubting that they thrive on the watered-down scholarly study which is all they are offered by most schools. This might well "contribute to the demotivation, the beredom and even truancy of many of them," Sir Keith told a conference in

The result, he suggested, was that many ended 11 years of compulsory school lacking basic skills of reading, writing or numbering, as well as self-discipline and ability to concentrate.

"It may be that these children will absorb more readily these basic skills and basic attitudes . . if the curriculum offors them more opportunities to use their knowledge—and the other skills and qualities they need
—in practical applications,"

But Sir Keith's public expression of concern for the many thousands of pupils illserved by conventional curricula, drew little more than cynical shrugs from certain small groups of would-be innovators in local education authorities and schools.

The cynics, who would much prefer to be enthusiasts, consist of officials and teachers trying to spread throughout the UK educational network the great improvements in the process of learning which are offered by the computer.

The arrival of the micro and the attendant possibility of applying computer-assisted-learning (CAL) to virtually the whole curriculum of every school, could evidently be a blessing both to the teachers and to the life prospects of by the Education Secretary.

"When well prepared and properly used, CAL has done wonders in motivating pre-viously alienated kids," said one educational inspector. "Learning to make the com-puter do things—and most children seem to pick it up very fast—seems to switch them on to the more normal work. We doo't know why

"The only trouble is that unless you motivate these kids early on, well before they leave primary school, they tend to be lost to education tenu to be lost to cuncation for ever after. And rather than concentrating the resources we have on using computers to enrich the whole of education from the

hottom up, as it were, we're dissipating them." . During the past decade educators have begun to use the computer as more than an adjunct - a super-calculator with a memory—to conven-tional methods of teaching ally linked subjects such as omics and geography.

Computer studies, in the sense of the use and the role of electronic data-processing, have been added to the curriculum in many secondary schools and can now be taken as subjects in the 16-plus examinations. Schools are also teaching older pupils programming as a subject in its

own right. The development of usage from the academic heights of education downwards was perhaps inevitable given the initial dependence of most colleges and schools on time-sharing facilities. Since only a to a terminal at any one time, small groups such as those studying for GCE Advanced level exams could benefit most effectively.

But in the miero, schools have potentially gained far greater abilities. They can extend the use of the computer to a wide range of studies, using it to automate fundamental experiments in academic subjects such as gathered in less-specialised projects, so that it becomes integral to the control of the entire learning process.

Moreover, simultaneous access can be given to large numbers of children simply by "linking up a lot of monitors in a daisy-chain," as the inspector put it. "So the inspector put it. "So there's not a shred of doubt that the possibility of huild-ing the computer into the educational culture right from the early years of primary schooling is there to hand." But this highly desirable aim can be achieved only by

a concentration of efforts, especially those of the nucleus of teachers who largely on their own initiative have ploneered computer-applications and the support-ing, technically expert staff in the education authorities.

define what they're trying to develop in pupils by teaching their particular subjects, show them what the computer can do to further those objectives, and work together to produce the software

cerned, there has been a considerable degree of concentration—to the chagrin of micro-computer companies whose products have not been chosen for general use in schools. While other systems are to be found in various places, the one which seems to be preferred at present is the Research Machines 380Z.

In theory, this is likely to be superseded by the BBC system for education being developed in conjunction with Acorn.

"Electronically speaking, it's a superb design and it could be built up gradually from an initial purchase of only 500 or so. But there seem to be difficulties in producing the schools' model, and whether it'll be robust enough nobody can be sure."

The training would require staff to be released from the classrooms at a cost which, given the squeeze on local education authorities fin-ances, few of them could afford, the inspector said.

yet. Money for this develop-ment is notionally included in the partly inflation-proofed £9m which the Government has earmarked over the next four years for its Micro-electronics Education Pro-

But the £2.3m which has which already exist in embryo

"We have to get teachers to

required." Where hardware is con-

Even so, the hardware is far less of a problem than the development of the necessary software and the training of large enough numbers of teachers sufficiently thoroughly to use the new development effectively.

Nor has the major task of software development received much of a start as

been allocated in the proramme's first year has gone largely towards setting np an organisation of 14 regional centres in England, Wales and Northern Ireland, as a means of ensuring that the software is developed coherently. Very little money has been distributed to local authorities and other bodies ward promising programmes

Surveys in the FT on new technology

FI surveys in the coming months will be examining important developments in the area of computer-based technologies and business systems.

Satellites

Satellites are attracting increasing commercial interest as a versatile means of transmitting both communi die and broadcast signals over long distances. They are expected to play a key role in the emerging information revolution" during the rest of the century. The survey on Satellite Communications and Broadcasting will appear on March 8, 1982.

Automated

manufacturing Manufacturing industry is on the verge of a massive increase in productivity through a combination of computer-based_technologies and robotics. These developments will be examined in a special survey on March 3.

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THE LEGISLE OF

Electronic

payment systems Banks are looking for ways to contain excalating costs for staff and property, while re-maining competitive in providing services to an everincreasing number of Retailers are customers. eeking new ways to cut the burden of paperwork on their staff, and to speed customers; through their check-outs. A. survey on March 31 will explain why finencial institutions and retailers will inevitably move to electronic

The electronic office

payment systems.

In the past year there has been an unprecedented spate of activity as suppliers of computers, telecommunica-tions and traditional office other to launch their concept of the "electronic office," where pen and paper have given way to electronic systems. But how ready is the market for these advanced products? Is the office of the future just around the corner-or far in the future?

This survey will appear in two parts: Office Automation on April 13, and Communica-tions on April 20.

Jason Crisp on a growth area

CAD/CAM still

COMPUTER-AIDED design and manufacture (CAD/CAM) has become one of the fastest growth areas in the computer industry; 10 years ago CAD/ CAM was little known but has recently attracted some of the world's largest com-

AD/CAM was originally developed for the electronics industry to belp design the increasingly complex microchips and printed circuit boards. Most electronics circuits are now so complex that they would be almost impossible to design without CAD/CAM. The CAD/CAM industry is

dominated by American suppliers. A handful of independent companies grew rapidly in the U.S. through the 1970s. including Computervision, Applicoo, Calma, and Autotrol. Computervision greatly outstripped its rivals in the second half of the decade. One of the reasons for Computervision's sucress was its early move into supplying CAD/CAM systems for CAD/CAM systems mechanical engineering.

Both the aerospace and automobile industries were quick to see the advantages of CAD/CAM. In aerospace, CAD/CAM is particularly useful in designing the highly complex surface shapes for the best aerodynamic effect while achieving the maximum strength for the minimum

In the automobile industry the reduced lead times in producing a new design, the ability to simulate a collision on the computer and the opportunity to avoid expensive mistakes in the building of the prototype all helped in the rapid introduction of CAD/CAM. All volume car manufacturers now use computer-aided design. BL has one of the largest CAD/CAMsystems in Britain.

Most of the independent sup-pliers of CAD/CAM systems have been bought by large corporations in the past two years. General Electric of the U.S. bought Calma, and Schlumberger, the giant oil services group, bought Appli-con, which resulted in speculation on how long Computervision would - remain

McDonnell Douglas, one of the ploneering companies in the development of CAD/CAM for its own use in aerospace manufacture, sells its system to other companies. Inter-national Business Machines has a fairly small share of the CAD/CAM market, but it has been advancing rapidly.

In Britain there are about 60 organisations - ranging from independent companies, soft-ware houses, subsidiaries of large companies to manage consultants -- which offer. CAD services and sys

lost are very small compared with the U.S. companies. Automation, toasts it is the largest independent European sup-plier of CAD/CAM systems, has recently reported a loss of £1.5m for the half year to August 1981. The main problem is its very high research and development costs com-bined with weak sales of its larger systems as companies defer capital investment be-cause of high interest rates Quest exports over half its hern-

over. Although it has substan-tial sales in the Eastern bloc it does not sell, it present in the U.S., which accounts for 50 per cent of the world CAD/CAM market Quest has specialised in the electronics industry but recently bought Genesys, a small CAD/CAM company

specialising in construction and architecture, from the National Research and Deve-lopment Corporation. Racai also has a CAD/CAM subsidiary (Redac) also

specialising in supplying systems for design of elec-tronics products which is of a similar size to Quest.

Most of the suppliers of thru-key CAD/CAM systems are

a minicomputer made by companies fike DEC Hewlett-Packard, Data General Prime and Perkin Elmer. The most notable exception is Com-putervision which has developed its own computer. Quest also developed its own minicomputer after finding delivery times from its U.S. supplier rapidly extended. There has been considerable concern that British manufacturers are being slow to adopt CAD/CAM which may result

in lower competitiveness with

other countries.

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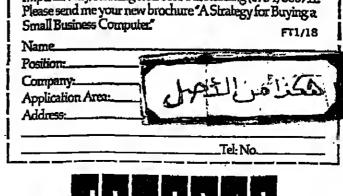
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We change the way the world thinks.

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competition

By Samuel Brittan

Why De Lorean wants more

PRAYING FOR AN UPTURN

By John Griffiths

TT IS a long way from Cail of criminal misconduct and fornia to Belfast, but the continuing shump in the U.S. car from Mr De Lorean against market now threatens serious those involved. Among them problems for the infant De Was Mr Bill Haddad, a former problems for the infant De Lorean vice procedure who market now threatens sections those involved. Among them problems for the infant De Lorean car company, and the DK Government which has backed it to the type of 180m in cash and bank guarantees.

Six months ago De Lorean's Six months ago De Lorean's Six months ago De Lorean's steel sports cars were selling in the US for 110,000 above list price. Now more than 2,000 cars have yet to find a buyer, the Belfast plant has been forced to have output and both the company and the Northern Ireland Office are praying for an upturn in the

praying for an upturn in the

Export Credits Guarantee De-partment (ECGD) which is the

culmination of months of

De Lorean wants \$60m to

\$70m from the ECGD to help

A golden goose

laying jobs in

a wasteland

definite future.

negotiations.

and company restructuring in praying for an appear in the U.S. this spring.

This slump in U.S. demand makes all the more critical today's meeting between senior De Lorean executives and the the summer was delayed. It would have capitalised a new bolding company. De Lorean Motor Holdings at \$240m, Under this would have been grouped De Lorean Motor Campany, the U.S. sales company, and De Lorean Motor Cars, the Belfast manufacturing company in which the Northern Ireland Development Agency holds a £17.757m equity stake.

finance its steadily growing stocks of unsold cars. Its current \$50m line of credit There were aspects which tha UK Government agencies in-volved, NIDA and the Northern from Bank of America is exvoived, NiDA and the normern Ireland Department of Com-merce, did not like. The result of the ensuing squabble, says John De Lorean, "was that we missed the window." By antum, with the U.S. motor industry deep in recession potential investors in hausted and without the extra finance at can barely afford to produce at a rate of 12,000 cars a year, let alone 20,000 which was the original target. The company still believes that a fature upturn in demand will recession, potential investors in the project were showing all the enthusiasm of a vegetarian for a T-bone steak.

the underwriters advised a more of De Loreans has become severely restricted. \$12 each with warrants to buy an equivalent amount later. That, too, was still-born. A third attempt was abandoned earlier this month. Mr De If the ECGD says no-and Lorean now accepts that it may be many months before another the negotiations have not been attempt will be made;

easy—De Lorean can probably spill make a profit producing only 40 cars a day for the in-• Then came the allegations of irregularities. "The joint effect,"
Mr De Lorean told the Financial
Times last week, "was a bell of
a lot of order cancellations. But Mr John De Lorean is invilling to comment on what this might mean for the com-People were saying 'why should pany's 2,600 workers. For them I buy a car from a company which might not be around?";" the coming of the De Lorean plant has been akin to that of a • The U.S. new car market has also performed even worse than

gelden goose laying jobs in an memployment wasteland.
Today's meeting also follows the furore over the allegations of financial irregularities which swirled round the company last swiftly cleared of any charges 11 per cent. For domestic manuThe company was Loreans compete the fall was according to Mr De Lorean.
The net effect is that



Mr John De Lorean and the first shipment of his cars in the U.S.

But the crux of its problem

proving too volatile for a com-

pany just starting off. De

could be 20 per cent as the

more well-beeled man's thoughts

turn to spring and, maybe, De

to play ball today will dapend

heavily on wbether Northern

Ireland development officials

can convince it that De Lorean

Whether the ECGD decides

year since 1961. That bas had severe implications for De Lorean because many of its 350 dealers have U.S. volume car franchises. De Lorean should be the cream on top of the cake. With precious little cake, their

The fact that they have contractual commitments to buy 43,000 De Loreans under their equity participation agreements a factor sometimes overlooked in assessments of De Lorean's immediate prospects-is of little consolation.

As one U.S. industry analyst puts it, "De Lorean knows a lot better than to solve the company's liquidity problems by stuffing cars down their throats -and driving them to the wall." The downturn has worsened

since October, a month in which registrations hit a 20-year low. "In November they were run-ning at an annualised rate of 8m. In December it was 6m. expected in the past few months.

Sales in 1981 fell for the third year in a row to 8.53m. In the The 5.8m rate in this year's first sector in which the \$25,000 De. 10 days are at a 30-year low," The 5.8m rate in this year's first

facturers it has been the worst Lorean has built 7,000 cars; turn almost certainly depends on the attitude of other governsome 4,700 have been sold to dealers; but only 3,000 regis-tered by the final owners. ment departments. ered by the final owners. That poses a knock-on In the faca of all this it is dilemma for the Government

not surprising that De Lorean both political and financial. The has cash flow difficulties.

Government has already taken There are other compounding a great deal of flak about the factors—the De Lorean company amount of public money pumped still complains that a film ton—in so far, even though it was a still complains that a £14m topup UK Government loan granted in 1980 should have been on the original agreement. treated half as a grant, and a flow claim for damage and guarantees will not necessarily

disruption during the IRA hunger strike is still awaiting cost more money — except in the still unlikely event of a crash-and the prospect of a reduction in jobs so soon after the plant has opened might preis that it has been feeding cars at a steady rate into a market sent a less palatable alternative. But the dilemma does not end

De Loraan had hoped with Lorean's own estimate is that December accounts for 44 per cent of annual sales: March its share flotation to do two things: first to start buying out the De Lorean Research Partnership, 125 early private backers of the De Lorean project whose \$151m investment currently entitles them to 23.4 per cent of profits and who are clear deterrent to further fund-raising.

The second aim was to start worth the risk. And that in to get cash together for the

\$80m saloon project planned for 1984. De Lorean now claims it is vital to the company's long-term future, removing its dependence on one, exotic sports car and even—Mr De Lorean bas said-holding out the prospect of lifting Belfast employment to 6.000 or more.

economy.

the funds for the four teams bave been allocated on an ad

hoc basis. Following the recom-mendation of an SSRC sub-com-mittee, there is going to be an

open competition for qualified

applicants for the four years

The existing teams are all

expected to reapply. In addition, the Minford Liverpool Model,

which now receives a prototype (or "baby") grant, is expected to apply for full-scale funding. There will also be an applica-

tion from Professor Michael Beenstock's newly formed City University Institute for Financial and Economic

The NIESR and the two Cam-

bridge groups would be regarded

the LBS is seen as inbetween

("moderate monetarist").

and its financing

from September 1983.

Resaarch (CIFER).

Some £19m worth of work on it must start the year-it is already in clay model form at Guigiaro's Ital Design studio in Turin. Some \$22m in other planned investments may be dispensable, but De Lorean feels the saloon is essential. The UK Government has indicated that it would consider more grant and loan aid for the saloon, but only if the company looked stable and was making

To start providing that aid now would be jumping the gun in terms of the Government's own criteria and presents a more difficult decision, involving hard cash rather than guarantees.

De Lorean argues that given the high level of unemployment and the peculiar prob-lems of Ulster the true net cost to the UK Government by August of this year is not as much as the £67m in equity, loans and grants that have actually been paid out.

Some £1.3m has already been

handed back to the Government in royalty payments: £1.4m in debt servicing, £11m

> Shrinkage . . would be a tragedy

a year is pumped into the eco-nomy by employee spending, nearly film a year is spent on utilities—spart from invest-ment and labour to build the plant itself. Some 59 per cent of components by value are sourced in the UK, which De Lorean claims has created a further 7,500 jobs, though other analysts would put the likely multiplier closer to 1:1.

Meanwhile, John De Lorean insists that "there is no danger of the company not making it. If necessary, the operation can be cut back to the 12,000 a year level and still make profits of £14m-£15m a year on that basis. But that would mean shrinkage, and that would be a tragedy.

A NOVEL kind of competition four years at a time, food in is to be beld in April. It is for return for work is guaranteed." Social Science Research Coun-cil (SSRC) funds between full-scale models of the British cent both because of "cuts" and The SSRC is spending about £0.5m per annum to support four main teams: the National Institute of Economic and Social Research (NIESR), the London Business School (LBS),

to accommodate a new central unit to provide common ser-vices, evaluation and a point of contact for outsiders. The committee judges would be within their rights in trying to arrange some rationalisation, eg, putting the NIESR and one of the Camthe Cambridge Economic Policy Group (CEPG) and the "other" Cambridge team—the Cam-bridge Growth Project. So far, bridge groups together to pro-vide a Keynesian model, both short-term and long, and putting CIFER with the LBS or Liverpool for a comprehensive classical approach. The Rothschild idea of direct

contracts from interested gov-ermment departments would be a bad idea in this instance, where the most important ques-The are not always the ones governments like asking, and where a buffer is needed to prowhere a biliner is needed to pro-tect research teams from the political and Civil Service fashions of the moment. Two-thirds of the Treasury's expir-ing research grant to the NIESR being switched to the SSRC, thus ending an unhealthy symbiotic relation.

If the whole of Government, academic and private financing on macro models of all kinds is added together, it amounts to about half the cost of Brides-head Revisited. Although such as Keynesian, with the Cambridge Groups being more interested in the longer term, and the Growth Project specialising in sectoral breakdown. Liverpool and CIFER would be regarded as classical (so-called "monetarist") while the LRS is seen as inherween models are more likely to pro-vide "normal science" rather than intellectual breakthroughs, thay are the research technique favoured by some of the most go-shead young economists, in-cluding even the critics of conventional forecasting.

The Keynesian groups regard output as demand determined. Many of the models represent the working out of the vision of the monetarist ones as supply one or two dominant personalidetermined, and the LBS as ties. This is both inevitable and desirable in the present supply determined in the long run but demand determined in the short. The novelty of CIFER state of the subject.

is that it will study the long-There is thus a very strong term growth of output from the supply side—including the effects of public expenditure case for continuing the workso long as it is not regarded as the whole of economics and that it is not erroneously sup-Michael Posner, the SSRS posed à la Jeremy Bray that chairman, has likened the new Government policy can ba desystem to a pool where "life is cided by examining the techbrisk and the inbabitants have to work for their food; but for nical entrails of the rival beasts.

Letters to the Editor

The dress industry and the multi-fibre arrangement

From the General Secretary, of imports of dresses from ment that provided that Korea National Union of Tailors and Korea (January 13). should be allowed a further National Union of Tailors and Garment Workers

Sir.-Workers in the clothing industry, under constant threat of losing their jobs, can surely be forgiven for sometimes wondering just what use international trade agreements like multi-fibre arrangement really are. For all too often the terms of the agreements seem to be ignored by the exporting countries and neither monitored nor policed by the portion of total imports. European Commission. Scepti- Having quite clearly failed to cism will surely grow at the spot the difficulties in time, the news of the Commission's European Commission pro-

During 1980 imports of such dresses totalled 202,000. For

the first nine months of 1981 however, this figure had increased by over 325 per cent to 860,000. Under the basket extractor

procedures contained in the MFA, the European Community is enabled to ask for a category of garments from a single source to be put under quota where these reach a certain pro-

ceeded to negotiate an agree- 16, Charles Square Ni-

From Mr A. Boiley 100,000 dresses to cover the period to the end of 1982. So while thousands of jobs were

bureaucracy were happily signing away a 375 per cent increase on dress imports from Korea. In the light of this bam-fisted and incompetent approach, is it any wonder that despair is rampant througout large parts of the United Kingdom clothing

being lost in the dress industry

industry. Alec Smith.

National Union of Tailors and Garment Workers,

Transport and the public

adjudication_

Lorean cars.

Sir.-The letter from the during 1981, the Brussels Paris, for example.

Errors of etymology

Graphic Display Systems.
Sir,—There is an error of etymology creeping into common use among your writers which should be remedied. It concerns the use of the word to describe certain guru " leading figures in the financial

A better word from Indian consciousness

A pundit, on the other hand, is self-appointed. He is liable to the human errors of egotism and vanity regarding his intellectual knowledge and he can often be wrong in his pro-

76 Hemingford Road. Comhridge.

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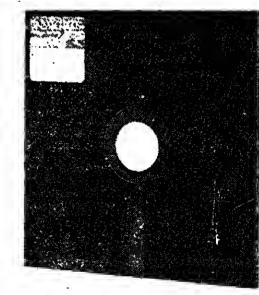
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achievements

From Mr K. McDowall. Sir,-Mr East's letter (January 3) on the ammunition provided by the self-deprecatory correspondence frequently published in this country reminds me of an occasion when with a group of Fleet Street journalist colleagues, I visited a giant industrial concern in Western Germany and inquired about com- Scotland for the petition from British rivals. An urbane executive dismissed the problem but said if all else failed there was always some help to be had from us! When pressed he produced a thick scrapbook, showing cuttings from most of our newspapersincluding quite a few pink ones -which he said always came in handy whenever he found a customer thinking in terms of buying from a British supplier! A senior colleague of mine still working on a Fleet Street newspaper, will, I am sure, confirm this incident.

. It was about the time the QE2 was on its trials and the headlines being run were that ship has been a remarkable SDP in the Hillhead by election flag-carrier for Britain, earning is likely to come true. On the millions in overseas currency and, though nearing the end of are willing to fight to maintain her years, is still a superb advertisement for British skill.

I cannot help wondering whether we are now screwing up the potential of the advanced passenger train. The coverage of its trials given will be of great assistance to those French salesmen who are busily trying to seek oversens customers for what is undoubtedly a good in-

But their product has had considerably more investment than the APT, which has a tremendous export potential for this country and can be used on existing track. I wonder whether . many newspaper readers realise that or are more familiar with the jokes about APT's troubles on trial? K. D. McDowall, Reform Club. Pall Mall, SWI.

From Mr N. Kirkpatrick

Sir,-I find it ironic that as the Monopolies Commission is declaring the Royal Bank of Scotland's possible merger with a foreign banking corporation to be against the public interest, a representative sample of the Scottish electorate in Hillhead (interviewed in a System 3 poll) are willing to vote for Mr Roy Jenkins.

The Commission's decision is obviously a result of public outrage at a much respected Scottish institution passing into foreign hands. The concern shown by the Monopolies Commission for the people of Scotland seems to me misplaced if the prediction of a win for the one hand the Scottish people their national identity, symbolised by the Royal Bank, yet on the other hand they apparently want to elect an MP who lives in London and knows litle, if anything, about Scottish affairs. He cannot therefore, truly represent their

interests in Parliament. mean no offence to Mr Jenkins, but I fear this by- 13, Old Court House, dustrial achievement for them. election is being used to further Old Court Place, WS.

the political career of one man and his party. The poll, conducted on behalf of BBC Scotland, is simply proof of the power of the media which has created the SDP and who are currently backing Mr Jenkins in the hope that he will lead the Alliance in the next Parlia-

It is my hope that the Scot-tish voters in Hillhead will realise they are being manipulated and vote for someone who can best represent their local interests rather than a media personality. A Scottish MP is surely in the public interest. Neil Kirkpatrick.

25, Lochan Avenue,

Odds on or against the weather

From Mr B. Smith Sir,-Mr David Fishlock's article (January 13) on weather forecasting confirms again the folly of daily weather forecasts to us public at large. Three questions constantly arise and

with accuracy what the weather will be in one relatively small

If it is very largely true that today's weather will persist tomorrow, can the weather men. offer better odds?

renders them meaningless? Brian P. Smith.

constantly get no answer.

If it is impossible to predict locality, why bother?

Why are there no odds-on or odds-against quoted by the weather men, no apologies for errors, and no direction of movement indicators on their beloved satellite pictures, which

chairman of London Transport (January 11) is typical of those who made comparisons with other countries, but fail to say that the UK cannot afford befty subsidies whereas others can-

Management and unions should make real efforts to provide a service for the public and put aside their selfish motives which are only to preserve jobs. It is doubtful if any of the leaders of both sides ever use public transport—if they did there would soon be an improvement

Alan Bailey. 44 Rothesay Court, Harleyford Street, SE11.

From the Managing Director,

According to Indian tradition a guru is one who, having inner mystical or knowledge through spiritual experience teaches a practice for attaining experience to those who come to him for guidance. He is a teacher, per se. One who has experienced spiritual transport or mystical experience but does not teach, is a holy man. a sadhu, not a guru.

culture for your writers to use would be "pundit." A pundit is a kind of priest who gives out his "wisdom" more like a preacher than the very personal relationship of a guru and his disciples. The highest-or satguru who has attained oneness with the ocean of spirit or universal source of light within, is, according to tradition, divinely appointed. His own self is lost in the higher self and be can make no mistakes.

John H. Davidson,

Thos. Ward answers RTZ's revised bid and share warnings

responded on Friday to the revised bid announced by Rio Tinto-Zine on January 6. Mr Peter Frost, Ward's chairman, has relterated his board's the company bad indeed expected opposition to "this illogical bid" a 1982 forecast of around £23m largely on the grounds set out on January 13 when RTZ posted its revised offer document.

Ward, advised by S. G. Warburg, insists egain that RTZ's warnings of a fall in Ward's share price—should the current bid iapse—are "reckless." A detailed comparison is made of "considered advice" by recom-the position of Ward's shares in the market with those of leading RTZ's bid and that they should competitors. Oo the basis of the comparison and Ward's recent market. £23m inrecast for 1982, sharehoiders are told they "need not worry about a fail."

The chairman adds, in stressing the reliability of this forecast, that Ward's experience so far in its current financial is fully up to expectations." RTZ's aspersions about the forecast "are irresponsible."

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THOS. W. WARD formelly had acknowledged expecting " just such a forecast."

RTZ's advisers, Morgan Grenfell, agreed last Thursday thet to be made by Ward-but explicitly rejected Ward's prior to the offer period suggestion that RTZ had itself concurred with the forecast. Inaccurate press reports were blamed for the confusion.

Prior to the offer period and business expertise. They expect to issue a prospectus in March giving full details of their plans.

The company's professional appropriate that the company is the company's professional appropriate that the company is the co

Mr Frost concludes his board's sell their sbares in the

By the ciose of trading on Thursday, RTZ had added again to its Ward holding picked up in the market. Morgan Grenfell disclosed on Friday that the holding now represents 35.72 per cent of Ward. The merchant bank added that it saw nothing new in the latest document from the forecast "are irresponsible." Ward except "a lot of spurious.

His letter claims that RTZ had indices." If RTZ's bid lapsed on based its 225p per share offer on January 26, it said, this would be hound to depress Ward's share figures in line with those now forecast by Ward and that RTZ price and keep it depressed."

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Prices now available on Prestel page 48145.

Dagnall Secs. offer for C.T.R. further extended

The unconditional offer by Dagnall Securities for the out standing capital of CTR in hand for plans to raise funds Securities at 20p a share has been further extended until 3 pm on March 24, 1982. Despatched on November 25, 1981, the offer was initially open for acceptance until 3 pm on December 16, 1981. This was extended on December 16 until 3 pm January 16. The terms and concitions of the extended offer are set out in the document of November 25.

acceptances had been received in respect of 557,137 ardinary shares representing a further 16.1 per cent.

FT Share Information

The following security bas been added to the Share Information Service: Computer and Systems Engineer-

(CASE) (Section: BARLOW HOLDINGS

The board of Barlow Holdings says the sale of 70 per cent of Barlow Piantations Sdn Bhd was completed on January 7. Certain pursuant to the contracts.

Aeronautics Board.

ECGD guarantee.

Plans in hand to raise £3m for **Bolton independent hospital**

in hand for plans to raise funds to build an independent hospital in Bolton. Total costs are expected to be around £3m and this sum will be financed through locally based consultants and doctors, other interested parties within the communities and banks and City institutions.

The board of directors forms which combines medical, sur-

advisers have already arranged the successful financing of the West Yorkshirs, Hertfordshire and Peterborough Independent Hospitals. The board intends to appoint a chief executive for controlling all aspects of the hospital's work.

The hospital, which will include 30 beds and 2 operating theatres, will be, based at e site already acquired on Chorley New Road Planning permission has already been granted and it is expected that building will commence in the first half of this year, with patients being admitted in the summer of 1983.

The hospital will be built and developed to a high specification. A comprehensive bealth screening service will be available, and also physiotherapy and pathology services. In line with modern practice, accommodation said Mr Rink.

The following statement was released over the weekend by Lazard Brothers & Co., Ltd.:

Lazard Brothers & Co. Limited

wishes to comment on a report in this week's "The Economist"

which in turn summarises a report of the United States Civil

Lazard Brothers has for many years been the leading British bank engaged in the financing of the export of aero engines from the

United Kingdom to airlines in many parts of the world under credit arrangements guaranteed by the Export Credit Guarantee Department, a U.K. Government agency.

Lazard Brothers wishes to state that it has no loans outstanding to

airlines in any part of the world which are not fully covered by

the following companies have normed dates of board meetings to the Stock Eachange. Such meetings are usually held for the purpose of considering dividends. Official indications are not Truet, Lada Investment Truet, FUTURE DATES shown below are based maunty on last TODAY

Interims: Ailse Investment Trust, Allied Residential, G.T. Japan Investment Trust, Peerless, Reetmor, Stroud Riley Orummond, Western Board Mills.

will be aavailable for mother and child when required. Mr Tony Rink, the chairman, said the board now had every expectation that it would raise the necessary finance to get this project off the ground. The medical profession in the Bolton area had given "excellent" assistance in all areas of planning, plus a "marvellous" financing start having already committed. 5150,000 of their

committed £150,000 of their The board considered that the full commitment of surgeons, doctors and the local munity wes critical for the success of an independent bos-pital outside the major city

Many interested parties in the local community had already in-dicated a strong desire to make an investment in the hospital,

U.S. company to buy video game maker

Harwyn Industries Corpora-tion said in New York that it has agreed in principle to acquire Summit Coin of Wales, for 1.3m Harwyn shares.

Based on Harwyn's current bid price of \$7.125 in the over-the-counter market, the transaction is valued et \$9.26m. A condition of the transaction is thet Harwyn will have available to the combined companies at that time an additional \$10m in working capital.

Harwyn and FNI Incorporated, a publicly held company that owns and operates the Seattle Supersonics HBA beaketbali franchise and is involved in e 175-unit condominium joint venture in the Seattle area, has announced the merger of FNI Into Harmyn on the conof FNI into Harwyn on the con-dition that Harwyn successfully

concludes the purchase of Summit Coin.

Harwyn is the exclusive distributor in the U.S. and all other parts of the world except the UK, Ireland and Continental Europe of the pulse saming and Europe of the video gaming and slot mechines and amusementgame machines manufactured by Summit Coin.

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Dates when some of the more important company dividend Dates when some of the more important tunipary awaged statements may be expected in the pext few weeks are given in the following table. The dates shown are those of last year's announcements, except where the forthcoming board meetings (indicated thus?) have been officially published. It should be emphasised that dividends to be declared will not necessarily be at the amounts in the column headed "Announcement last year

| Date | Announce: | | Ansounce : ment last |
|---|---|--|------------------------|
| Assoc. Dairies Jan 28 Assoc. FisheriesFeb 19 | | *Imperial Group Feb 11 *Lioyos BankFeb 19 LonrhoFeb 5 | Final 9.6 |
| Assoc. Peper IndsJan 21 Birmid | | *MFI Furniturelen 19 MarchwieiFeb 19 *Mercantils | |
| QualcastFab 18 *BETJan 21 Brown BrosFeb 26 | Int. 1.863 | NotwestFeb 23 | Final 12.25 |
| Brown (J.)Jao 30 Carrington | let. 1.76 | ManufugFeb 23 PleaseyFeb 25: "Rank OrgJan 25 | Inc. 3.22 Final 6.0 |
| Viyalia, Fsb 25 City OfficesFeb 10 Commercial | Sec. inl. 1.8 | Security Services Feb 18 | Final 1.1 |
| Senk AustFeb 25 Commercial UnionFeb 24 | lot. 10 cents Final 6.4 | Sime Berby Feb 19 Smith Bros. Feb 19 Stock | Int. nll |
| DatienFeb 18 | int. 1.225 Int. 11.0 | Conversionlen 20 Tals and Lylelen 20 Trusthouse | Final C.5 |
| *Eurotherm Intl. Jen 27 *Fitch LeveliJen 28 | Final 3.0 Int. 1.491 Int. 125 cents | ForteJan 21 *Union DiacountJan 27 | FineL14.0 |
| Guinness Pest Feb 10. | Int, 2.75 Finel 2.0 Sec. int. 5.0 | Sound meeting indimination issue since made. 4 Tailisade since made. 1 For | K free Scr |

shave

Public Works Loan Board rates Over 16, up to 9 161 Over 9, up to 10 161 Over 16, up to 16 161 Over 15, up to 25 161 Over 25 161

Non-quota loans B are I per cent higher in each case than non-quota loans A. † Equal instalments of principal: ‡ Repayment by balf-yearly annuity (fixed equal balf-yearly payments to include principal and interest). I With balf-yearly payments of interest only.

.151 . 151.

This advertisement is assued in compliance with the requirements of the Council of the Stock Exchange and is not an invitation to any person to subsectibe for or to purchase any share capital or other security of the Company.

Anglo American Industrial **Corporation Limited**

1,000,000 5.625 per cent cumulative first

preference shares of R2 each The Council of The Stock Exchange has admitted the

5.625 per cent cumulative first preference shares in Anglo American Industrial Corporation Limited to the Official List. Particulars of the shares are available in the Extel

Statistical Service and copies of such particulars may be obtained during business hours on any weekday (Saturdays excepted) up to and including 1 February 1982 from:-

Charter Consolidated P.L.C. 40 Holborn Viaduct London EC1P1AJ

Howe & Pilman City-Gate House 39-45 Finsbury Square London EC2A 1JA

18 January 1982

This announcement appears as a matter of record only.



December 1981

OFFICE CHERIFIEN DES **PHOSPHATES**

US \$175,000,000 Medium Term Loan

Unconditionally Guaranteed by

THE KINGDOM OF MOROCCO

BANQUE MAROCAINE du COMMERCE EXTÉRIEUR **GULF INTERNATIONAL BANK** B.S.C.

Managed and Provided by

BANKERS TRUST COMPANY CRÉDIT AGRICOLE

BANQUE NATIONALE de PARIS GULF INTERNATIONAL BANK B.S.C. SOCIÉTÉ GÉNÉRALE

BANQUE ARABE et INTERNATIONALE THE CHASE MANHATTAN BANK, N.A. dinvestissement (b.a.ll.) **EUROPEAN ARAB BANK GROUP CRÉDIT LYONNAIS** THE SUMITOMO BANK, LIMITED

ARAB BANKING CORPORATION (A.B.C.) BANCO EXTÉRIOR DE ESPAÑA BANK BUMIPUTRA MALAYSIA BERHAD CRÉDIT COMMERCIAL DE FRANCE LIBYAN ARAB FOREIGN BANK

ARABBANK FOR INVESTMENT & FOREIGN TRADE, (A.R.B.LF.T.) ABU DHABI BANK OF BAHRAIN AND KUWAIT B.S.C. BANQUE MAROCAINE du COMMERCE EXTÉRIEUR KUWAIT FOREIGN TRADING CONTRACTING &

INVESTMENT CO. (S.A.K.) NATIONAL BANK OF ABU DHABI



GULF INTERNATIONAL BANK B.S.C.









To the shareholders of

Thos.W. Ward

THERE IS EVERY REASON TO REJECT RTZ'S BID AND RETAIN YOUR WARD SHARES

- A prospective dividend yield of 7.0% and a price-earnings multiple of 7.4 times can support a market price of 225p for Ward shares on their own merits. As a bid price 225p is unacceptable.
- Ward's construction interests alone are worth 265p per Ward share to RTZ.
- RTZ have still not had the confidence to say 225p is their final bid and have left open a means under the Take-over Code to increase it.

This advertisement is published by S. G. Warburg & Co. Ltd. on behalf of Thos. W. Ward p.L.c. The directors of Thos. W. Ward p.l.c. (including those who have delegated detailed supervision of this advertisement) have taken all reasonable care to ensure that the facts stated and opinions expressed herein are fair and accurate and each of the directors accepts responsibility accordingly

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TO LATE

CREDITS

Shaved margins hint of better status for Brazil

borrowers emerged last week week after a long gestation France.
with the announcement of terms period was the U.S.\$1.25hn, 15for a \$125m eight-year credit year deal for the Eraring Power for Bozzi's development bank Station in New South Wales.

margin over Kurodollar rates Salomon Brothers and bears a of 2; per cent, but the normal margin of ; per cent over Longary over U.S. don inter-bank offered rate prime rate has been shaved to (Libor) for the first five years only 11 per cent Chase Manhattan, which has had the operation on the drawing board for some time, will be agent for

Its lamen now, however, gives the credit something of a benchmark status for Brazilian deals at the start of 1982, appearing to confirm the view of one segment of the market that margins for the Brazilian public sector could be heading hightly lower...

Some bankers have heen saying since last summer that externally. margins on Brazilian credits should drop because of the country's success in improving its visible trada accounts.

But others still argue strongly that the size of its foreign horrowing requirements is daunting. On its own admission Brazil has to borrow another \$14bn this year on top of the \$18hn is raised abroad in 1981-and per cent for the first three

NDE This is being arranged by the The credit beens a standard Bank of New South Wales and (Libor) for the first five years rising in stages thereafter to \$ per cent and finally to ? per cent for the last five.

The funds will be used by a private sector Australian partnership to purchase the Eraring power station from the State electricity commission. In Australian currency the loan last week produced little amounts to some A\$1.1bn while progress.
the balance of the A\$1.65bn Poland has confirmed its purchase price will be found through equity finance in the partnership and further borrowing either domestically or

The City of Madrid seems, meanwhile, to have solved the political problems delaying its long-awaited Eurocredit. A mandate was reported to be imminent last Friday for a \$50m, 10-year credit guaranteed by ICO, the Spanish state financing concern. Terms include a margin of #

Romania will resume its debt discussions with international banks this week after a first round of talks held amid conditions of tight secrecy in Bucharest last Tuesday.

Banks which participated in the talks are understood to have undertaken to keep them strictly confidential but indications from the talks suggested that Romania will seek some form of orderly breathing space in its repayment schedule to Western banks and other creditors.

As expected the rescheduling talks on Poland and Costa Rica Poland has confirmed desire to sign a rescheduling

agreement with commercial banks but is still seriously

agreement

hehind with outstanding interest Cost Rica also faces serious problems with interest payments and government officials spent most of last week's meeting in Miami trying to convince hank

INTERNATIONAL BONDS

Fashion for zero coupons may prove shortlived

TENTATIVE INDICATIONS of lending limits are being watched years rising to 1 per cent thereeasiler conditions for one of the increasingly closely

after, and the agent is expected investors were losing interest in was placed so discreetly that it investors were losing interest in was placed so discreetly that it investors were losing interest in simply disappeared leaving most Schools' Council—which bears would-be buyers grasping vainly a much higher coupon—was than seven zero coupon bonds were offered in the Euromarket. The fashion was launched in

> modest way by Salomon Brothers on Tuesday with the announcement of a \$250m issue for General Motors Acceptance Corp (GMAC). Issuing activity picked up steadily in each of the ensuing days so that on Friday alone three more issues were launched — for Beneficial Finance, Caterpillar Tractor and second helping for GMAC.

Zero coupon bonds are always priced at a very deep discount hecause they hear no interest and consequently offer prospects of a substantial capital min, which is especially attractive to investors located in centres where such profits are exempt from taxation.

The mystery confounding the these investors were located. There was some evidence that much of the zero coupon paper was heing placed in Japan, possibly because anticipated meditors that funds are simply changes in the tax laws make not available to meet a protected \$225m interest bill this Japanese investors et the investors et the moment.

Peter Montagnon | Salomon intrigued traders

after a slice of the action.

As a result, a mood of pent-up demand was created, in which the fashion snowballed, yet fashions in the Euromarkets have a way of changing almost as soon as they appear, and by Friday signs were emerging that the amount of paper on offer might become too great for the market to absorh.

The secret of the success of the early issues in particular was that issue managers had discovered pockets of demand in Japan, and probably in some offshore centres too. Yet even offshore centres too. Let even if it continues, such demand will not necessarily remain general and there is always the risk that the experiment will be overdone.

This hard lesson was learned in the Canadian dollar sector last week, where demand for high coupon issues from retail investors in Europe has prompted a flurry of new issue activity since Christmas.

By Friday, however, this sector too was becoming saturated and one issue, a C\$50m, 16f per cent bond for Canadian Pacific Enterprises, was withdrawn because of market con-

nonetheless increased to C\$30m from C\$25m.

Once again there were no conventional fixed rate Eurodollar issues last week as the secondary market continued to languish under the impact of short-term rate movements and the poor performance of the New York bond market.

Seasoned issues shed a point on the week and six-month Eurodollar rates advanced } point to 15 per cent.

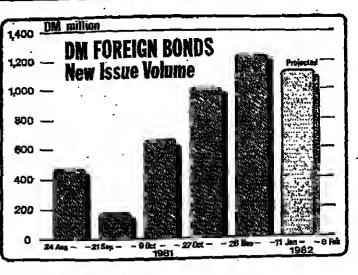
But another issue with warrants to purchase stock was announced for a Japanese borrower. C. Itoh is raising \$50m in this way through Nikko Securities and Morgan Guaranty.

Japanese issues were also firmly in evidence in the Swiss Franc market where new issu ing activity continues at a rapid pace despite a I fall in seconoary market prices last week.

German hanks announced another large calendar of foreign issues despite the weaker bond market where foreign issues shed I point.

Bay. Vereinsbans

Peter Montagnon



GERMAN BONDS

Bundesbank fights dollar disease

stationing of a few more armed guards at the well-defended entrance to its headquarters for the Bundesbank, West Germany's Central Bank, to fend off the political onslaught which it is likely to face in the next three weeks.

The German capital markets last week caught another case of dollar disease. As interest rates in the U.S. rose and fears of Federal Reserve tightening spread, rates in the German capital began to shift higher too. The Central Bank, which had been struggling vaioly to get money market rates down to about 10 per cent through open market operations, suddenly found itself fighting to stop them surging over the 101 per cent level at which the "special

Lombard" was fixed at the beginning of December. Worse, even long-term interest rates began to rise. The Federal Railways' DM 900m bond issue, which at the beginning of the week was expected to come with a 91 per ceot coupon, surfaced on Thursday with a 10 per cent coupon and yield of 9.92 per cent. At the shorter end of the credit market, yields rose by as much as half a percentage point. On Friday, dealers reported that the railways loan was selling reasonably well, but the Central Bank had already indicated that it would support prices by huy-

ing heavily in the market. U.S. rates, and perhaps some tightening of Fed policy, could currency outflows, partly due to that prospect, however. renewed foreign borrowing in

1T WILL require more than the imposition of martial law in Poland, the political chimate has taken a turn for the worse.

All this reduces the Bundesbank's scope for lowering the Lombard rate. Yet the Bonn coalition Government has been inching towards measures to fight unemployment, in the face of the threat that the jobless total could soon hit 2m, and an interest rate cut is widely considered to be a vital component of any such plan. Deutche Bank's co-chairman, Dr Wilfried Guth, went out of his way last Thursday to express public support for the Central Bank's monetary policy. But outside the parliamentary opposition, Herr Karl-Otto Poehl, the Bundeshank chief, and his colleagues are hard-pressed to find much support for a continued tough monetary stance, and they fear being saddled with the blame for the slump.

The bundesbank feels that a Government stimulation programme could undermine confidence in the capital markets. It worries that any substantial easing of monetary policy now would only store up trouble for the future. It is conscious, too, that the unions have yet to settle the 1982 wage round; the moment is tactically wrong to show any sign of weakening.

As it looks at the political forces lined up against it, however, the Central Bank may well be hoping that by the time that For the Bundesbank the final decisions on a programme latest signs of an increase in are taken, the international situation will have eased enough to permit at least a token cut scarcely be less welcome. The in the Lombard rate to 10 per D-Mark has come under cent. The German bond market renewed pressure, there are net is not going to jump for joy at

Stewart Fleming

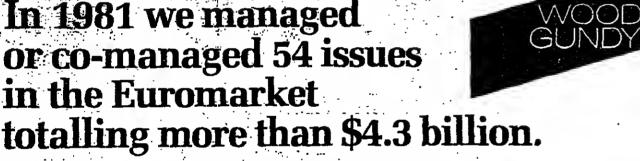
CURRENT INTERNATIONAL BOND ISSUES

| Borrowers | Amount m. | Maturity | Av. life years | Coupon % | Price | Lead manager | yield % | Во |
|--------------------------------------|--------------|----------|-------------------|----------|---------------|--|------------|------------------|
| U.S. DOLLARS Mitsubishi Chemicali | 50 | 1987 | 5 | 117 | 700 | Morgan Stanley Yamaichi | 11.000 | D-MAI Austria |
| Minorco§1 | 60 | 1977 | 15 | 91 | 100 | Hambros | 9.464 | Austria Swed. |
| Orient Finances | .60 | . 1977 | 15 | 51 | 100 . | Nomura Intl- | 5.319 | JWCG. |
| Nippon Electrics | . 80 | 1997 | -15 | • | 100 | Daiwa Europe | • | SWISS |
| Hitachi Cable§ | 40 | 1996 | 15 | • | 100 | Nomura Inti- | • | Nihon |
| Toloru Corp.§ | 30 | 1997 | 15 | • : | 100 | Yamaichi, Schroder Waggʻ | • | EIB‡ World |
| C. Itoh | . 50. | 1988 | 6 | • | . 100 | Nikko Secs, Morgan Guaranty | • | NTT Nissan |
| GMAC1 | .250 . | . 1992 | . 10 | ٥ | _ 25 <u>£</u> | Salomon Bros. | 14,750 | Mitsub |
| GMACT | 150 | 1990 | . 8 | 0 . | 34 | Salomon Bros. | 14.440 | Showa |
| ARCO | 500 | 1992 | 10 | 0 | 251 | Salomon Bros., Merrill Lynch | 14.53 | 5tanda Fina |
| PepsicoT | 100 | 1992 . | 10: | 0 | . 26 | Morgan Stanley | 14.420 | |
| Wells Fargo | 125 | 1988 | . 6. | .0 | 44.4 | Morgan Stanley, Daiwa | 14.490 | EUAs |
| Caterpillar Tractor! | 300 | 1992 | . 10 | - 0 | 24 | Goldman Sachs | 14.560 | Copeni |
| Beneficial Ovs. Fin.: | 150 | 1990 | 8 | .^ O | 32,7 | Blyth Eastman Paine Webber, Merrill Lynch | 15.000 . | YEN Forsma |
| CANADIAN DOLLARS | 50 | 1989 | 7 | 161 | 100 | Morgan Stanley | 16.500 | KUWA |
| Montreal Schools | 30 | 1987 | 5 . | . 171 | 100 | Merrill Lynch | 17.500 | Charbo |

it terms. -- recoment. T Floating rate note. in U.S. Securities and Exchange Commission. It issue may also be sold on an FRN basis. Note: Yields are calculated on AIBD basis.

S FRANCS SBC UBS, SBC, CS d Bank**İ 5BC UBS bishi Rayon**§ 1987 a Line**§ 7985 Soditio 12} Kredietbank 10.32 Daiwa Secs. narks Kraftgrupp‡ AITI DINARS onnages de France KFTCIC, Credit Lyonnais

In 1981 we managed or co-managed 54 issues in the Euromarket



Ahitibi-Price Inc. US \$50,000,000 15%% Series I Debentures Bank of Montreal US \$150,000,000 164% Debentures Series 7 due 1991 Bank of Montreal US \$125,000,000 Floating Rate Debentures

The Bank of Nova Scotia US \$25,000,000 151/2% Deposit Notes due

The Bank of Nova Scotia US \$100,000,000 Floating Rate Debentures Banque Nationale de Paris US \$225,000,000 Floating Rate Notes due

Canadian Imperial Bank of Commerce US \$185,000,000 141/2% Deposit Notes due Canadian Imperial Bank of Commerce Can \$75,000,000 154% Debentures due

Canadian National Kailway Company US \$100,000,000 14%% Notes due 1991 Canadian Pacific Securities Limited Can \$40,000,000 17%% Guaranteed Notes due 1987

Canadian Utilities Limited
Can \$50,000,000 17% Debentures Series 1981 due 1996 Citicorp Overseas Finance Corporation

US \$175,000,000 151/2% Guaranteed Notes Citicorp Overseas Finance Corporation NV US \$150,000,000 164% Guaranteed Notes

due 1986 The City of Winnipeg US \$50,000,000 151/4% Debentures due

The City of Winnipeg US \$50,000,000 17% Debentures due 1986 CSWI International Finance NV US \$15,000,000 9% Convertible Subordinated Guaranteed Debentures due

Cummins Overseas Finance NV US \$50,000,000 151/2% Guaranteed Notes

Daiwa Securities Co Ltd US \$50,000,000 5½% Convertible Bonds

Du Pont Canada Inc. US \$65,000,000 131/2% Debentures due Eldorado Nuclear Limited

US \$50,000,000 13 4% Notes dua 1986 European Coal & Steel Community US \$40,000.000 14% Bonds due 1988 European Investment Bank

US \$100,000,000 16%% Bonds due 1991 The Federal Business Development Bank Can \$40,000,000 174% Notes due 1986 The Federal Business Development Bank US \$40,000,000 15%% Notes due 1984 GMAC Canada Limited Can \$60,000.000 18% Guaranteed Notes

GMAC Overseas Finance Corporation NV US \$300,000,000 181/2% Guaranteed Notes

GMAC Overseas Finance Corporation NV US \$100,000.000 14%% Notes due 1987 Genossenschaftliche Zentralbank Aktiengesellschaft US \$50,000,000 Floating Rate Subordinated Notes due 1992

Genstar Limited US \$50,000,000 143/% Debentures due Genster Corporation
US \$75,000,000 171/2% Debentures due

US \$50,000,000 151/2% Debentures due

Lafarge Coppee US \$40,000,000 151/2% Bonds due 1989 Municipal Finance Anthority of British Columbia US\$54,000,000 Bonds Retractable at Holder's Option in 1985, 1989, 1993 due

National Bank of Canada US \$40,000,000 15 1/4% Deposit Notes due

Ontario Hydro US \$100,909,000 131/2% Bearer Bonds due 1991

US \$150,000,000 16% Bearer Bonds due

Ontario Hydro US \$200,000,000 16% Bearer Bonds due

PanCanadian Petroleum Limited Can \$65,000,000 16½% Debentures due 1988

Petro-Lewis International Finance NV US \$20,000,000 9% Guaranteed Oil-Indexed Notes due 1986 Province of Nova Scotia US \$75,000,000 15% Debentures dua 1991 Province of Saskatchewan US \$100,000,000 181/2% Notes due 1988

Quebec Urban Community Can \$20,000,000 164% Bonds due 1986 The Royal Bank of Canada US \$100,000,000 14% Deposit Notes due

RoyNat Inc Can \$40,000,000 17¼% Secured Notes Series AO due 1986 Scotland International Finance BV US \$100,000,000 Guaranteed Floeting Rate

Notes due 1992 Shell Canade Limited US \$100,000,000 15%% Debentures due

Simpsons-Sears Acceptance Company Limited US\$40,000,000 17%% Secured Debentures dne 1988

Société d'Hypothèque Procan Can \$35,000,000 174% Notes due 1986 Société Nationale des Chemins de Fer Français US \$75,000,000 13% Bnnds due 1991

Tipco Finance NV US \$30,000,000 8¼% Convertible Subordinated Debentures due 1996 TransCanada Pipelines Limited US \$100,000,000 16% Annual Coupon

TransCanada Pipelines Limited US \$75,000,000 17%% Notes due 1988 Tribune Company Overseas Finance NV US \$50,000,000 14% Guaranteed Notes due

Union Carbide Canada Limited Can \$50,000,000 16% Debentures due 1989

Goldman Sachs International Corp.

Wood Gundy Limited

Amro International

Banca della Svizzera Italiana

Bank Julius Saer International

Banque de Paris et des Pays-Bas

Christiania Bank og Kreditkasse

Crédit Commercial de France

Richard Daus & Co. Bankiers vormals Hans W. Peterson

E.F. Hutton International Inc.

Lehman Brothers Kuhn Loeb

Mitsubishi Bank (Europe) S.A.

Morgan Stanley International

Pierson, Heldring & Pierson N.V.

Richardson Securities of Canada (U.K.)

Nomura International

McLeod Young Weir International

Dresdner Bank Aktiengesellschaft

Hambros Bank

Gefina International

Banque Générale du Luxembourg S.A.

Berliner Handels- und Frankfurter Bank

Bank Brussel Lambert N.V.

Greenshields Incorporated

Banque Nationale de Paris

Credit Suisse First Boston Limited

Orion Royal Bank Limited

Alahli Bank of Kuwait K.S.C.

Amhuld and S. Bleichroeder, Inc.

Swiss Bank Corporation International Limited

Al-Mal Group

Daiwa Europe

Fuji International Finance

Dominion Securities Ames

Union Bank of Switzerland (Securities) Limited

This announcement oppears as a motter of record only.

lmasco Limited

(Incorporated under the laws of Canada)

U.S. \$50,000,000

151/2% Debentures due January, 1989

Issue Price 991/2%

(less accrued interest to January 15, 1982)

Banca Nazionale del Lavoro Bank Gutzwiller, Kurz, Bungener (Overseas) Bank Leu International Ltd. Banque Internationale è Luxembourg S.A. Banque Worms Breisach Pinschof Schoeller Citicorp International Group Crédit Industriel et Commercial Drexel Burnham Lambert Genossenschaftliche Zentralbank AG Handelsbank N.W. (Overseas) Japan International Bank Limited Lévesque, Beaubien Inc. Merck, Finck & Co.

Samuel Montagu & Co.

Norddeutsche Landesbank

Nesbitt, Thomson

Pitfield Mackay Ross

N.M. Rothschild & Sons

N.Y. Slavenburg's Bank

Strauss, Turnbull & Co.

S.G. Warburg & Co. Ltd.

Société Générale de Banque S.A.

Banca del Gottardo Bank of America International Bank Heusser & Cia AG

Algemene Bank Nederland N.V.

Bank Mees & Hope NV Bankhaus Hermann Lampe Banque de Neuflize, Schlumberger, Mallet Bayerische Hypotheken- und Wechsel-Bank Chemical Bank International Group Continental Illinois County Bank

Creditanstalt-Bankverein Deutsche Girozentrale -Dautsche Kommuoalbank-European Banking Company

Girozentrale und Bank der österreichischen Sparkassen The Hungkong Bank Group Hessische Landesbank Kleinwort, Benson Kidder, Peabody International LTCB International Manufacturers Hanover Midland Doherty Merrill Lynch International & Co. Morgan Grenfell & Co.

The Nikko Securities Co., (Europe) Ltd. Sal Oppenheim jr. & Cie. Nordic Bank Renoul International (N.Z.) Rea Brothers Salomon Brothers International Schröder, Münchmeyer, Hengsl & Co. J. Henry Schroder Wagg & Co. Limited

Smith Barney, Harris Upham International Société Séquanaise de Banque Svenska Handelsbanken

Morgan Guaranty Ltd

Samva Bank (Underwriters) Skandinaviska Enskilda Banken Société Générale Standard Chartered Merchant Bank J. Vontobel & Co.

Vereins- und Westbank Westdeutsche Landesbank Girozentrale Westfalenbank

January 1982

due 1987

In addition, we participated in more than 250 Eurobond issues denominated in various currencies including US dollars, Canadian dollars, pounds Sterling, Deutsche marks, French francs, Japanese yen, Dutch florins and Norwegian kroner. **Wood Gundy Limited**

Offices in principal cities across Canada and in New York, London, Tokyo and Paris

January 1982

U.S. BONDS

Widespread gloom over jump in money supply

THE SHOCK of a \$9.8bn in- others are far from sure. crease in the money supply, already been a tough week for all week though ironically the Wall Street, and set a bad tone gloom lightened a bit in midfor the resumption of trading today. Bond prices slumped as the news came out, and ripples quite moderate. reached into the fareigo exchange and gold markels.

Some traders thought the reaction overdonc. But even if o technical rebouod brings prices up again today. Wall Street wants to see large declines in M1 io the next few weeks to wash sut" the hulge and get mooetary growth back on track.

The jump was widely pre-

dicted because the figures covered the new year boliday week when the unusually early timing of social security payments left extra large sums in the backing system. But the consensus firecast was fir o rise of about \$5bo. The jump also came on top of the upward trend in money growth that pushed M1 way above the target set hy the Federal Reserve. Over the latest stotistical the measure has grown at a 10.1 per cent acoual rate compared to the 2.5 to 5.5 per cent official target.

Wall Street is now des perately worried that the Fed will be forced to respond to the surge by tightening credit Whether the Fed itself is as alarmed by eveots is a matter of conjecture. It must have expected maney growth ts accelerate as a result of the easier stance it adopted briefly lost outumn. But it may prefer to see how the bulge behaves in the coming weeks before taking any action. Certainly the weakness of the economy tconfirmed by the 2.1 per cent drop in industrial productioo in December reported last Friday) creotes something of a dilemma. some economists claim the recovery is in eight.

Mobil retail unit to cut workforce

MOBIL's Montgomery Ward sobsidiory said about 1.100 department store jobs will be cut as part of its previously restructuring programme.

The retail chain said as many people as possible will

Fears about the money supply M1, on Friday, capped what had dominated the market's mood all week, though ironically the week as the consensus grew that the M1 increase might be

The fears came through strongest in the bond market where prices sank by several (Shart points in all sectors. (Shart rates were little changed, thsugh jumpy.) The beliwether long treasury bond (14 per cent to 2011) which was issued at par last November bit a low sf 96, where it yielded classe on 14.50 per cent. Csrpsrate bonds alss fared hadly, specially io the utility sector which is dominated by deht issued by AT & T, whose fortunes have changed dramatically as a result of the settlement of its

anti-trust case While the parent of the Bell system will probably emerge in good financial shape, the 22 operating companies which provide local service and must be apun off, will lose the AT & T umbrella. These subaccount for some \$39bn of the total \$47bn of AT &T debt outstanding. All but two are triple A credits exceptiona are New England Telephone which is AA and Pacific Telephone which is A). But all will he reviewed by the New York credit rating agencies in light of the divestiture terms, and could be down-

graded. With interest rates now back near their 1980 highs, borrowing has dried up again, and multinationals bave gone to slake their credit thirst in the Euromarkets. As usual, the upcoming borrowing calendar is burstiog with new issues. But most have been there for weeks. and few are expected to come to market uotil interest rate treods become clearer.

David Lascelles

About three jobs are being eliminated at each of the chain's 360 stores, although the larger stores will lose In district's 19 stores, Chicago about 80 jobs bave been cut.

LANDMARK LABOUR CONTRACT

Ford follows Japanese example

BY IAN HARGREAVES IN NEW YORK

Within a week the company for the first time dropped a quarterly dividend to sbareholders, and opened at a breathless pace negotiations with the United Auto Workers union aimed at tearing up an existing three-year pay contract and replacing it with something less expensive.

A few days before that Ford, faced with a disastrous 151-day U.S. stsckpile—60 days is normal-of its much-praised Escort-Lynx world car, started to offer two years' free maintenance and a 5 per cent price cut in an effort to revive sales.

The U.S. motor lodustry, having lost \$5bn in the past two years, simply cannot afford to pay shareholders dividends, or ts pay its shop floor workers \$20 an hour when Japan is paying \$12 an hour. The reces has made it politically possible to act upon these obvious truths.

Meanwhile, Mr Philip Cald-

FROM THE OUTSIDE, it looks well, Ford's dogged, methodical be seen as a landmark in because until the launch of the as if something close to panic chairman, is clinging grimly to changing forever the adversarial Topaz in the spring of 1983, bas set in at the Ford Motor his central plan for overhauling the group's product line. He got the board to reaffirm last week that \$3.5bn will be spent labour contract on the Japanese Japanese competition is less on modernisation in 1982, up model.

Japanese Competition is less formidable but where General from \$2.5bn last year. This, at the end of a two-year period in which Ford has lost almost \$2.5bo, is no mere routine matter.

> The picture at Ford is thus an unusually moddy mixture sf shart and long term factors. The dividend cut, which will save about \$150m this year, is a cash conservatioo measure and a useful negotiating point with the union. The new contract, which

> reduce Fard's \$6bo annual U.S. wage bill by 10 per cent is a cash conserver as well as a device which might wipe out between \$2 and \$4 of the labour cost disadvantage with But by taking the

> cautious steps towards direct profit sharing for shop floor workers and by offering them firm job security commitments the Ford conworkers and them firm tract may in the long term

Detroit. The Ford deal is front-wheel drive car in the

The discounts on the Escort-Lynx are more worrying in the complete failure of Detroit's massively promoted "import fighters" in the battle against Japanese cars. Import penetra-tion of the U.S. car market has not dropped by o single percentage point in the past year. In December it actually atarted to rise again.

This year Ford will have the capacity to produce in North America. Lynxes. Last year, with lower capacity, Ford sold less than half a million. With the outlook for the market as glssmy as it could be, Ford is facing the prospect of seeing much of this expensive new plant lying idle in 1982.

In short, the Escort-Lynx may be Ford's most successful car ever, yet in the U.S. it has ts do even better-and especially so

labour bargaining landscape of Ford will not have an all new being described in Detroit as a larger compact range, where Motors is a power house. This is a severe bandicap at a time when slackening petrol prices have again attarted to quicken the market for larger cars.

> Nothing about Ford's product offering in 1982 suggests that its 16 per cent market share will improve. With the overall market farecast to be snly 9.5m cars (as opposed to 8.5m last year). Ford appears likely to go losing money in North

is its lsng-term financial strength. Ford ended the year with ns bank debt, just over \$2hn in lsng term debts and almost \$8bn in sharehslders' equity. In other words, Ford still has a lot of borrowing power ss long as lenders continue to take the view that the company's so-called "comeback cars"—the Escort and the Topaz —will enable it ts do just that Amsterdam bourse to start unlisted securities market

BY CHARLES BATCHELOR IN AMSTERDAM

later this month start a parefiel ture, will be treated flexibly. market on similar lines to the unlisted securities market in absorb the existing over-thecounter market

The parallel market will begin operations on January 28 and is intended to make it easier far companies not listed on the stack exchange to raise funds. It is boped the parallel market will act as a "stepping stone" for companies to the official exchange.

The demands made of com-

panles listed on the parallel market are lighter than those applied to those quoted on the The company's saving grace hourse proper. Parallel market companies need list snly 10 per cent of their entire capital, compared with 100 per cent on the bsurse. This would allow familyowned companies to retain control of their business. The minibourse, but companies acting as mortgage banks or consultants.

THE AMSTERDAM bourse will with a different capital strikexpected to provide the same London. The new market will information to shareholders but the form in which this information is provided may be simpler and thus cheaper. Charges to companies for a listing will also be lower.

The parallel market will list what are known as official and unofficial accurities. The trading rules applied to both are the same but the unofficial accurities will out have to meet the same initial requirements to obtain a listing.

Trading will take place sn the stock exchange floor during normal bourse hours, with the two brokers who currently manage the overthe-counter market, Brockman's Commissiebank and D.W. Brand, acting as specialists for the parallel market,

-The bourse will publish prices mum capital requirement will and trading volumes of official be Fl 2.5m (\$1m) as on the stocks daily and of the m stocks when

INTERNATIONAL APPOINTMENTS

Changes at Champion Spark Plug

CHAMPION SPARK PLUG EUROPE, has announced a reorganisatiso in its Europeao speration. The European nanagement structure will now he as fallsws: Mr Bjorn Gillberg -director of marketing-Europe, Mr William Graham-director sf finance—Europe, Mr William Wilkle—managing director—UK operations, Mr Annibate Frattini -managing director-Italian operations, Mr Sidney Allen-_Italian —director of manufacturing— Europe and Mr Jacques Bronchart-director of eogineering-Europe.

Belgian operations, Mr David J. HENRY SCHRODER COR-PORATION has appointed Mr Jeffrey Collinson, head of the mergers and acquisitions and dogiestic corporate advisory serchairman, Mr Hutheesing, formerly responsible for international corporate odvisory services and project finance. has become choirmao. Both positisus are newly created and are ioteoded to establish new markets for the

Smith—managing

existing markets. The company is the investment bank subsidiary of Schroders Inc. the New York-hased holding company of the Schroder Grsup hased in London.

• Mr Per Boman, executive vicepresident, bas been appointed head of DET NORSKE head of DET NORSKE VERITAS' industrial and sfiahsre divisiso from March 1. • CONTINENTAL GUMMI-

WERKE states that Herr Helmut Werner will lead the Cooti/ Eogiebert Group in successisn to Dr Hahn who joins Volkswageo as president early in 1982. Herr Athert Englebert has retired as president of Uniroyal Englebert Tyres, but remains on the board of Continental Gummi-Werke. Mr William C. Douce has been

elected chairman and chief executive of PHILLIPS executive of PHILLIPS
PETROLEUM COMPANY and Mr C. J. Silas bas been made president and chief operating officer from April 1. The Phillips hoard also elected Mr Silas, Mr Glen A. Cox and Mr R. G. Walthe executive committee. Mr L. H. Johnstone will hecoose vice chairman of the board oo April 1. Mr Douce, president and chief executive officer, will succeed the

firm and expand its share of Mr Martio has been chairman marketing. Latin America. He bility for the company's three resource groups—exploration and production gas and gas liquids asd minerals. SCHERING - PLOUGH

CORPORATION states that Mr Robert P. Luciano will become chief executive sficer so February 1. Mr Lucians, whs was president, will succeed Mr Richard J. Bennett, who continues as choirman. Mr Michael J. Lodge, president of Pakhsed USA Inc of Houston,

has been appointed to the board sf the parent company, PAKHOED HOLDING NV sf Rotterdam, as a deputy director He remoins chief executive of Pakhoed's American division. Mr Keoneth Johnsoo has joined the board of DUNLOP INTERNATIONAL, Zurich. Mr Gerald A. Dingley bas beeo appointed president direc-teur geoeral of PENTAX FRANCE, a newly established subsidiary of Asohi Optical Company of Jopan. Mr Dingley was mooaging director of Pentax

this country. HIGHLAND DISTILLERIES

UK and will cootinue with his

marketiog and distributiso lo

respoosibilities

since 1974. Mr Silas is an execu- will he responsible for the tive vice president with responsi- marketing and sales in that areo of the products of Matthew Gisag and Son, Perth, and Lang Brothers, Glasgsw. He will be hased in Buenss Aires, Argeotica.

CZAR RESOURCES LTD and its whstly-swaed U.S. subsidiary Czar Ressurcea Ioc have made the fallswing changes. The board has been expanded to include Bonita O. Rawlyck who Czar's senior vice-presideot, finance, and chief financial officer, and Mr Brico C. Bentz, vice-president of H. A. Simons (International), of Vancsuver, British Columbia.

Czar's operations in the U.S. will be boodled by Mr John A. Habbishaw. vice-president and geoeral manager, Czar Ressurces Inc. and Mr J. Michael Gatlin. vice-president and assistant general monager. In Canada, Mr Anthony D.

Convey has been promoted to vice-president. Canadian opera-tions. Czar Resources Ltd. to handle the daily sperations of exploration and Mr P. Richard Canadiao develspotent. Ewacha bas heen promoted to manager, engineeriog, and Shoron P. Runge has been promoted to the position of

BANK as senisr vice-president, branch banking division. Mr Auriemma heads the hank's credit services group and is re-sponsible for all consumer tendlog, including the bank's credit. card operations. Or John H. Dyer, director of

Ansul Central Technical Services, has been appointed chairman of the PANEL FOR FIRE RESEARCH, one of the evaluations in the Pacific tion panels for the National Mr Richard Bureau of Standards. Dr Dyer will serve in this position notil June 30 1934. The oppointment is made by the National Academy of Sciences. Mr B. J. H. S. Fellzer, director and vice-president of WALTER

HELLER OVERSEAS COR-PORATION, bas been appointed senior vice-president. Walter E. Heller Overseas Corporation is a wholly-owned subsidiary of Walter E. Heller International Corporation, Chicago.

BANK OF MONTREAL has

vice-presidents. Mr Hotchkies the operations head of

joined EUROPEAN AMERICAN Europe, Africa and the Middle East — areas which he will continue to supervise, along with the new responsibility for marketing Flexi-Van's container established Flexi-Van offices in Asia io 1974 and aince then has been responsible for the com-pany's cootainer leasing opera-tisms in Asia. He will be responsible for all intermodal opera-

Mr Richard Donegan, a General Electric Company senior vice-president and group execuchief executive officer of VENDO COMPANY on March 1. He will succeed Mr Spencer Childers, who will continue as chairman. Mr Childers assumed the addi-tional jobs of president and chief executive officer in August resigned. • The LOUISIANA LAND AND

EXPLORATION COMPANY has appointed Mr Richard A. Bachmann as senior vice-press appointed Mr John D, Topley. Bachmann as senior vice-pres-vice-president and district dent finance and administration, executive banks—Latin America a new position within the comand the U.S.

pany. Mr. Bachmann, was war of financial officer to and Mr. W. Robert Reidelberger serve as chief financial officer to trativa services: Mr Bachmann chairmae Mr W. F. Martin when states that Mr James D. S. Iones treasurer.

Flexi-Van cargo container and was vice-president and treasurer be retires at the end of March. has joined as vice-president Mr Donald J. Anriemma has trailer leasing business in of Itel Corporation.

All these Bonds have been sold. This announcement appears as a matter of record only.

NEW ISSUE

Nederlandse Credietbank uv Vereins-und Westbank

November 10, 1981



VILLE DE MONTRÉAL

25,000,000 European Units of Account 13 1/4 per cent. Bonds due 1988

Kredietbank International Group

Algemene Bank Nederland N.V. Amro International Limited Bank Brussel Lambert N.V. Berliner Handels- und Frankfurter Bank Citicorp International Group Crédit Communal de Belgique/Gemeentekrediet van België Crédit Lyonnais

Kuwait Investment Company (S.A.K.) Merrill Lynch International & Co. S.G.Warburg & Co. Ltd.

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Westdeutsche Landesbank Girozentrale

Nippon European Bank S.A. Nomura International Société Générale de Banque S.A.

Zentralsparkasse und Kommerzialbank, Wien

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Swiss ox. Opin 54 SV. 3/50 151 Tuylor, Woodrow 84 90 1/81 4.94 Tmaseo Int. 84 95 ... 8/61 68 Tricary 87 95 2/81 31 25 Union Bt. Switz, 5 85 ... 2/80 70.79 Mitaubash H. 9 89 0M 2/22 203 Sherp Cpn. 67, 88 0M ... 9/80 591.8

100% 151% 92% 98% 99% 100% 151% 100% 101% 101%

EUROBOND TURNOVER (neminal value in \$m)

3.619.6 Lest week.... Previous week 2,839.3 2,913.7 Other bonds

Last week..... Previous week

No information availableprevious day's price. † Only one market maker supplied a price.

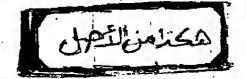
STRAIGHT BONDS: The yield is the yield to redemption of the mid-price; the amount issued is in millions of currency units except for Yen bonds where it is in billions. Chaoge on week = Change over price a week

FLOATING RATE NOTES: Deosoticated to dollars unless stherwise indicated. Coupoo shown is minimum. Cidte=Date oext coupon becomes effective. Spread=Margin above six-month offered rate (t three moth; s above mean rate) for U.S. dollars. C.cpn = The current coupsn. C.yld = The current

CONVERTIBLE BONDS: De-

convertible bonds: Decominated in dollars unless
otherwise indicated. Chg. day=
Change oo day. Chv. date=First
date fsr conversion into shares.
Chv. price=Nominal amount of
bood per share expressed in
currency of share at conversion
rate fixed at issue. Prem=Percentage premium of the current
effective price of ocquiring
shares via the bood over the effective price of ocquiring shares via the bood over the most recent price of the shares. The list shows the 200 latest international bsods for which so adequate secondary market exists. The prices over the past week were supplied by Kredlet-bank NV; Credit Commercial de France; Credit Lyonnais; Com-merchank AG; Deutsche Bank AG: Westdeutsche Landesbank Girozeotrale: Banque Generale du Luxembourg SA; Basque Internationale Luxembourg Internationale Luxembourg.
Kredielbauk Luxembourg.
Kredielbauk Nederland NV:
Picrson, Heldring and Pierson,
Credit Soisse/Swiss Credit Bank;
Union Bank of Switzerland,
Akroyd and Smithers; Bankers
Trust International; Credit Gomernia mercial de Franca (Securities) London: Citicorp International Bank: Daiwa Europe NV: Daite Securities (UK); EBC; First Chicago, Goldman Sachs Inter-national Corporation; Hambros Bank; HJ International; Kinder Peabody International; Manufacturers Hanover; Merrill Lynch Morgan Stanley International, Nikks Securities Company (Europe); Orion Royal Bank, Salomon Benthers International: Samuel Montogu and Co. Scandinavian Bank; Societe Generale Streites Turnbull; Suchkomo Finance International: S. G. Warburg and Go.; Wood Gondy.

Closing prices on January 15



| pagion and Markets | | OCK MARKETS | |
|--|----|-------------|--|
| Section Sect | 1. | 10 | Month Mont |

MONEY MARKETS

COLIN MILLHAM

Credit shortage hits London

week, and interest rates showed York. Action by the Federal rise in the note circulation, bills Reserve to drain liquidity from mahiring in official hands and a the Federal funds market had

money was in very short supply per cent for 10 days.

tax of £275m.

an impact on rates, as did fears that last week's money supply would record a large rise.

Against this background London three-month interbank money increased to 15% per cent from 15% per cent but continued week as the far paying season the season that
money increased to 15% per cent from 15% per cent, but continued assistance by the Bank of England kept the key seven day rate down to around 14% per cent.

Despite several helpful factors, such as payment of £177m rate support grant, gilt dividends of around £170m and about £400m assist the money market by disaround £170m, and about £400m assist the money market by dis-from a maturing Treasury stock, counting commercial bills at 10

| BANK OF ENGLAND TREASURY BILL TENDER | | | | | | | | | |
|--|---|--------------------|--------------------|--|--|--|--|--|--|
| ' Jen. 12 | Јал. а | Jan. 15 | Jen. 9 | | | | | | |
| Total of | Top accepted rate of disco | unt 14,5529% | 14,82052 | | | | | | |
| applications£378.795m £1 Total ollocated£100m | 2100m roto of disco Averago yield | 14.5459% 15.09% | 14.57013 15.25% | | | | | | |
| accepted bid £95.37 Allotmont et minimum level 78% | 296,305 Amount on offi et next tende | | £100m | | | | | | |

CONDITIONS WERE fairly tight on Friday as large tax payments in the London money market last came through, including tobacco DM 400m nn Monday borrowings tions pushed up call money to by the banks under the special 10.5 per cent by mid-week from week, and interest rates showed a firmer trend, largely in This, coupled with run-down Lombard facility rose to less than 10 per cent by min-week from response to rising rates in New bank balances, the usual Friday DM 1.2hn on Wednesday following the Federal rise in the note circulation, bills ing the expiry of a securities maturing in official hands and a repurchase agreement with the Friday call money had eased to take-up of Treasury bills by the Bundeshank worth DM 3.4bn. 10.10 per cent

WEEKLY CHANGE IN WORLD INTEREST RATES

| | Jan. 15 | ohange | | Jan, 15 | ehange |
|--|--|-------------------------|---|------------------------|----------------------------|
| LONDON Base rates 7 day intorbunk | 141 ₂ 145 ₈ -15 | Unah'd | NEW YDRK Prime rates Federal funds | 1534 193a-125a | Uneh'd |
| 3 mth Interbank | 15 lg - 155g | + 15 + 25 -0.1242 | 5 mth Treasury Bills 5 Mth. Treasury Bills | 11.95 | +0.49 |
| Band 1 Bills Band 2 Bills | 143 ₈ 143 ₈ | Unch'd Unch'd | 5 Mth. C D | 15,40 | +0.35 |
| Band 5 Bille 5 Mth. Treasury 2 lie 1 Mth. Bank Bills | | Unch'd | | 10.5 10.65 10.50 | Unch'd Unch'd -0.075 |
| 5 Mth. Bank Sile TOKYO | | | PARIS | 1434 | Unch'd |
| One month Bills Three month Bills | 5,59375 6,53125 | -0,0826 Unch'd | 1 Mth. Interbank | 151e 154 | + 4 |
| BRUSSELS Dno month Three month | 147 ₈ 15 | _1g Unch'd | MILAN Dno month Three month | 20% 91% | Unoh'd +1 |
| AMSTERDAM One month Three month | 105g 1054 | — | Dus month | 18 121 ₂ | + 84 + 84 |

London—band 1 bills mature in up to 14 days, bend 2 bills 15 to 33 days, and band 5 bills 34 to 53 days. Rates quoted mpresont Sank of England buying or selling mites with the money rearket during the week. In other centres mites are generally deposit mites to the domestic money market, and their respective

THE POUND SPOT AND FORWARD

10.96°; 10.97°; 10.96-10.97 10.50-10.62 419-420

1.5360-1.5380

12311,-12271, 5.8693-5 8741 5.8675-5.8775

\$,6220-5.6270 224.75-224.55 15.08-15.09 1.8570-1.9580

2pot 1 8685 4.3225 10.9650 3.4725 419.5

f UK and Ireland are quoted in U.S. curroncy. Followed premiums and discounts apply to the U.S. dollar and not to the individual currency.

FORWARD RATES AGAINST STERLING

EMS EUROPEAN CURRENCY UNIT RATES

7.97685 2.44378 5.20623

Changes are for ECU, therefore positive change denotes a week currency. Adjustment calculated by Financial Times.

7.91117 2,40989

CURRENCY MOVEMENTS

Based on trade weighted changes from Washington agreement December, 1971,

109.0 58.7 116.8 104.5 86.5 121.7

-10.5 -43.8 +102.8 -19.7 -15.0 : -57.5 -37.6

10.9675

1.8642 4.2713 10.990 3 4200

2'-1'-om pm '-c pm-'- die 2'-1'-ore pm 3.20-2.90y pm

0.28-0.18c pm 0.60-0.50c pm

france. Financial leane 81 90-82 00

olgran rate is for convarsible france. Financial Iranc 81 90-8 x-month lerward dellar 0.48-0.38c pm. 12-month 0.55-0 40c

THE DOLLAR SPOT AND FORWARD

2.33 5-4 pm -0.27 2-3 dm -2.64 52-52 pm 8.72 8.95-8.65 pm

1.48 0.48-0.38 pm 4.28 1.50-1.40 pm -1.11 0.29-0.34dis 3.09 2.20-2.10 pm

-3,01 50-65 dis -2.33 -7.31 23-24'; dis -7.71

1 02 1 25-0.35 pm -1.75 2.55-2.85dis

1.8642 4,2173

CURRENCY RATES

Storling 19
U.S. S. 19
Canadian S. 14.21
Austria Sch. E⁵
Belgian F. 14
Oonleh Kr. 11

Yon 5: Norwan, Kr. 2 Spanish Pta 2 Swedish Kr. 11 Swiss Fr. 5 Breek Dr'ch, 2012

D mark....... Guilder...... French Fr....

= 1.5368 ±1.6412 = 1.1077 =1.3733 =1.5663 ±1.6628

0.614495 0.566412

5,20523 1309,52 257,572 5,23069

105,116 5.98544

1,15127 1,57591 18,5704

5.72404 1419.10

"RIGHTS" OFFERS **EQUITIES**

| lesuo | 29 + 6 a | 1981/2 | | D . | | . 1 | - 2 | | _ | price | ₹g | • | | н |
|--|---|---|---|---|-----------|------------------------------|---------|-------------------|-------------------|--|--|---|--|-------------------|
| price p | Paid Paid Renus Dest | | - 6tock | | + or - | Pome | COVE | ylalo | ratio | 71 142 2.5A8 | F.P. | 31/12 29/12 — | 29/1 29/1 — | 10 |
| 100 535 82 80 581 ₂ | F.P. — F.P. 2211 F.P. 1311 F.P. + F.P. 2/18 | 98 25 36 30 86 82 84 81 10 2 5912 5812 | Asset 2prizi 10p | 30 84 82 82 591 | | 50,5 54,9 5451 2,18 | 2.1 | 8.3 5.41 | 6. | 15 162 25 120 44 50 26 50 cts | NII F.P. F.P. | 17/12 | 21/1 | - 50 |
| ## ## ## ## ## ## ## ## ## ## ## ## ## | F.P | 53 59 305 270 1712 14 9 415 70 58 120 117 5 512 | *Nayters £1 •Malaysian Tin 5p Mewmarket (1981)66 *Ownem Abroad 10p Peek Nidgs. •Sheldon Jones. Speyhawk, 10p. Viners 1p. *York Mount. | 265 171 ₂ 71 ₂ 69 117 | | 50,5 v3.8 bd7.0 | 15.1 45 | 4.1 7.2 8.5 | 9.5 5.1 5.5 | Residence phalic property of Assuration of Privide Q Green power for the property of the prope | on property of the court of the | ir bese dividen u Forei and yie Moore | tus e den den esset eld be | div div div |

FIXED INTEREST STOCKS

| 27.48 £25 - 25½ 95 Calase Het, Des Auto, 16% Gtd, Ln, 2905 95½ 100 F.P. 25½ 104 102 Essex Woter 10% Red, Prf. 1982 104 Essex Woter 10% Red, Prf. 1982 105 Essex Woter 10% Red, Prf. 1982 105 | | baue prico | mount old up | date date | | 1981/8 Stock | | Closing price & | + or |
|---|---|---------------------------------------|-----------------|-----------|--|--|--|---|------|
| | ! | 100 100 15 100 100 100 | FFFFFFFF | 11111111 | 2512 104 89 107 10013 100 9954 72 21 | 95 102 86 102 99 224 994 64 54 | Essex Woter 107, Red. Prf. 1932 Habitat 93 Conv. Uns. Ln. 98-8001 Haslemore Est 9pc.Conv Uns Ln. 280148 Nat wide Bdg. Society 1542 8ds (24/11/82) Do. 1512 8ds. (15119/82) | 95 12 104 29 105 98 34 29 99 34 55 80 | -T |

| esuo | 10 P | Ronus | mo. | 1961/8 | | Stock | - + or |
|---|------------------------------------|------------------------------|---------------------------|--|--|--|--|
| price P | Am | • | • | High | Low | | 5- |
| 714 42 558 15 52 25 20 44 50 26 0 cts | F.P. NII F.P. NII F.P. | 17/18 | 29/1 21/1 = 21/1 | 164 92pm 3pm 183 2pm 55pm 55 | 155 60pm 1pm 178 7pm 32pm 48 50 - 36 | Abwood Mach. 71sp. Brown (M) C S R A\$1. GCarton Real Ests.10p Great Portland Estates 50p. I.C. Kwik-Save 10p. Lennons Grp.10p. Strong & Fisher. Telfos 20p. T N T 50o. Wearwell 5p. | 164 +4 63pm +1 2pm -1 180 -7pm -32pm -1 52pm -1 52pm -1 |
| esed epitel Assu | med p | rospec ir bese dividen | d on | divide | nd on f | y for dealing free of stamp di hydend rate paid or payab uli captal. g Assumed divide scrip based on previous since yer based on previous 379 poctus or other official eating | and and yield, increased or |

INCAL AUTHORITY BOND TABLE

| FOOLE VALUE | Annual Interest Life |
|---------------------------------------|--|
| Authority (telephone number in | gross pay Minimum of interest able sum bond |
| parentheses) Knowsley (051-548 6555) | % £ Year 1,000 48 |

FT LONDON INTERBANK FIXING

| 5 months | U.S. dollars |
|-------------|---------------|
| bld 14 5/18 | offer 14 7/18 |
| 5 months | U.S. dollars |
| bld 15 1/18 | offer 15 6/19 |

The fixing rates (Jen 15) are the eritimetic means, rounded to the nearest one-extrenth, of the bid and offered rates for \$10m quoted by the market to five reference banks at 11 am such working day. The banks are National Westminster Bank, Bank of Tokyo, Deutsche Bank, Bank on Retirente de

LONDON MONEY RATES

| | Certificate of dopesit | Interbank | Authority doposits | negotiable bonds | Nouse Deposits | Company Deposits | Market Deposits | Frengury Bills & | Bank 2ills o | Trade Bills 4 |
|--------------|---------------------------|-------------------------|--|------------------------|--|---------------------|--------------------|---------------------|---|------------------|
| overnight | = | 5.15 L | 141 ₂ -143 ₄ 145 ₈ -143 ₄ | = 1 | = | 141-15 | 124-144 | - | _ | |
| days or | - 1 | 1468·15 | 1434.1478 | } .= } | Ξ | 15.154 | 144-145 | = | = | = |
| One month | 154-154 154-154 | 151a 1514 · 154 1514 | 15 | 155g-15 154-157g | 151 ₈ 151 ₈ 151 ₈ | 151a 153 | | | 1413-141 ₂ 141 ₂ | 15 to 15 to |
| hree months. | 15 to 15 x | 1612-155g 15 4-15 4 | 15 ie 15 ie | 181g-1534 147g-143g | 151g 151g | 16 | 1414 | 14.2 | 143-14: 143-1412 | 154e |
| lino months | 154-164 154-164 | 1512-1514 1514-154 | 15 a | 1514-1514 | 15 % 15 % | = | = 1 | = | -7-8-1-4-2 | - |
| wo years | | | 154 | | | | | ' | <u> </u> | |

Local authorities and finence houses seven days' notice, others seven days fixed. Long-term local authority mortgage retes nominally three years 15½ per cent; four years 15½ per cent; five years 15½ per cent. •Qank bill rates in lable are buying rates for prome paper. Surying mree for four-month bank bills 14½-14½ per cent; four month trade bills 15½ per cent; as liking rate for one month Treasury bills 14½ oar cent; two months 14½ per cent; three months 14½ per cent; and three months 14½-14½ per cent; and three months 14½-14½ per cent; three months 14½-14½ per cent; three months 14½-14½ per cent; three months 15½ per cent; three months 15½ per cent; three months t. Houses Sase Rates (published by the Financo Houses Association) 15½ per cent from Jan In Deposit Rates for sums at seven days' notics 12½-12½ per cent. Closing Bank Rates for its any Site: Average tender rates of discount 14.5459 per cent.

4.29-4,34 124.00-125.50

184.75-186.25

2299-2317

10.93-11.03

10.89-10.88 10.50-10.55 416-422

30.00-30.30

1.5360-1.5445

1.1917-1.1930 2.5160-1.5325

2.5160-1.5325 39.10-39.37 7.5000-7.5525 2.2940-2.3130 66.38-66.58 88.90-99.30 1231-12231; 5.8600-5.8740 5.8350-5.8725 5.8320-5.6433 223.00-224.75 15.08-16.121; 1.8400-1.8630

Beigran Franc
Danish Krona ...
German II-Mark
Franch Franc ...
Juich Guilder ...
Insh Punt
Italian Lire

Swiss franc_.....

French franc......

EURO-CURRENCY INTEREST RATES (Market closing Rates)

| Jan. 15 | Sterling | U.S. Dollar | Canadian | Dutch Guilder | Swiss Franc | West German Mark | French Franc | Italian Lira | Convertible | Jopanezo Yo |
|---|---|---|--|--|---|---|--|--|---|--|
| Short term 7 days' notice. Month Three months. Six months Doo Year. | 1434-15 1518 1614 1516-1516 152-1516 | 125e 195e 1234-15 135e 135e 14-144 141s 151e 16-1514 | 13-14 15-14 141-147: 151-151: 152-151: 183-153: | 104-10-2 104-10-2 104-10-3 104-10-3 104-10-3 10-3-10-3 10-3-11-5 | 816-814 814-826 814-826 814-815 814-815 | 076-10 10-1016 10-10-16 10-10-16 10-10-16 10-2-10-16 | 15.154 15.151s 151s-155g 151s-155g 161s-165g 171s-174g 181s-184g | 17-20 1854-21 20ag-215g 2154-225g 251g-2454 251g-241g | 121-15 15-15 18-20 1954-2054 90-911- 1254-2012 | 6-61g 21g-614 51g-63g 51g-65g 51g-61g 42g-67g |

CURRENCIES AND GOLD

Dollar strong

The dollar continued to ad-Sterling continued to suffer ance in the foreign exchange from the effects of the UK labour market last week. Eurodollar interest rates were firmer, with three-month rising to 141 per cent from 13k per cent. Fears that M1 money supply could rise by as much as \$10bn last week were behind the upward pressure on interest rates and the strength of the dollar, although by the end of the week most analysts expected a much lower money growth figure.

There was also considerable 91.8. interest in the December U.S. industrial production, and its implications for the recession in the economy, it was also suggested that the lack of money market intervention by the Federal Reserve on Thursday after several days of draining reserves was a sign that the authorities were prepared to let was back in the market again nn Friday.

the dollar's trade-weighted index rose on the week in 109.0 from 107.3. It improved to DM 2.3125 from DM 2.2585 against the Dmark: to FFr 5.87 from FFr 5.73 against the French franc; to SwFr 1.8575 from SwFr 1.8265 in terms of the Swiss franc: since November 1979, and and th Y224.50 from Y221.35 finished at \$376.377, a fall of \$24

situation, including the strike by train drivers and the vote on the present wage claim by the

level since late October on Thursday, but picked up towards the end of that day, and continued to recover on Friday. It finished at \$1.8685 a fall of 5.05 cents on the week, and the Bank of England index fell to 90.6 from

Rumours of a devaluation continued to plague the Belgian franc. although these were strongly denied by the Government in Brussels. It remained the weakest member of the European Monetary System, but well within the alarm hell divergence changed places several times as the second and third weakest EMS currencies, while the French franc lost its position at the top of the system in the Dutch guilder. This tended in push down Amsterdam interest rates, but put upward pressure on Paris rates at the end of the

Gold tnuched its lowest level

Jan. 14.

(£210-2111)-1 (£10814-10852) (£5454-551-1

FT UNIT TRUST INFORMATION SERVICE **OFFSHORE** &

OVERSEAS FUNDS

154 FC (LIE 1 (551) 10 - 1-0.30 -Brown Skirpley Tol. Co. (Jersey) Ltd. P.O. Car 503, 2s. Helier, Jersey 17th Sri Ps. (pt. 1977) 843-4031 35-41 Scretting Lon. 18-37 843-4031 35-41 Scretting Lon. 18-34 Potential Management Co. Ltd.
PC Cor 175, Hamilton, Bernada.
Potent Emilt - 192440 4,991 1.62
Batters Income - 224 2.37 10.82
Price of the Acet Ac. day Feb. 1

keyfus intercontinental law. Fd.

Eurobond Holdings N.V. Picterman 15, Willemstad, C.

152 For East Jan. 13 MISS II TO THE PARTY IN THE Hambros Fd. Mgrs. (C.L.) Ltd. P D. Box 86, Garrisey.

Chayston Commodities | Isin of Man) Ltd.
29, Atrel Street, Cougles, I.s.M. 0624 21724
Normandy Metal Trust | 1,944 | 1,373 | 4,80
Normandy Com. 7st. | 1,165 | 1,273 | 4,00
Camb. Correscy & 6d | 1,897 | 1,0428 | 6,00

BWS Deutsche Ges. F. Wertpap Grundungung 113, 6000 Frankfurt

114 (Account) _____ Ptsl Car dBd.Fd.(se.) 5.0

Being of the Prests

Hat, Westnesser Jersey Fr. Mgrs. Ltd. 29/25 frond St., St. Heller, Jersey. 0534 70041 High Income Fund. 41.4 13.6 13.95 Egalty Fund. 61.5 53.bat 10.19 10.19

101 - 22 | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 12% | 1

HOTES

ment (CL)

7/8 Krigerrand 342.43 Mapieles 5393.894 New Sovereigns 521.954 King Sovereigns 51151e-10612 Victoria Sova 51151e-10618

GOLD

| 52 pesos Mexico 100 Cor. Austria. 520 Engles | \$469-476 \$555-368 | 15261-2551 (£1954-1963 ₄) 2681 ₂ -2714 | 8368-371 | (£251 4-953) (£198-192 4) (£852-271 4) |
|---|---|--|---|--|
| OTHER C | JRRENCIE | S | | |
| Jan. 15 | | | | Note Rate |
| Argentine Peto Australie Dollar Srazii Cruseiro Finland Markka Grask Drachma Hoog Kong Dolla Iran Riol Kuwait Dinar/Ko Luxembourg Fr Maleysia Dollar New Zealand Dir Saudi Arab Riya Singeporo Dollar Sth. African Racq V.A.E. Dirhem | 1.5760 1.5770 249.25.48.96 8.230.8.961 107.48-110.718 10.318-10.938 142.50° 9.0.526.0.538 73.50.73.60 4.1950.4.2050 2.2970.8.3010 6.55.6.41 5.85.5.86 1.8675.1.8695 | . 0.5970-0.8975 199.32-129.97 4.4140-4.4160 58.58-58.72 5.8450-5.8550 79.30* 0.2829-0.2832 39.35-39.37 2.2460-2.2510 | Belgium Denmark Prance Oermany Listy Jepan Notherlande Norwey Portugal Spala Swade n- Switzerland | 15,99.14.1 10,90.11.0 4,221,4,31 2350.259 418.443 4,681,4.77 10,26-11.1 1251,-133 184.195 10,51-10.5 3,451,5-3,451,5-3 |
| | + Now o | ne rate. • Sellie | 00 COM | |

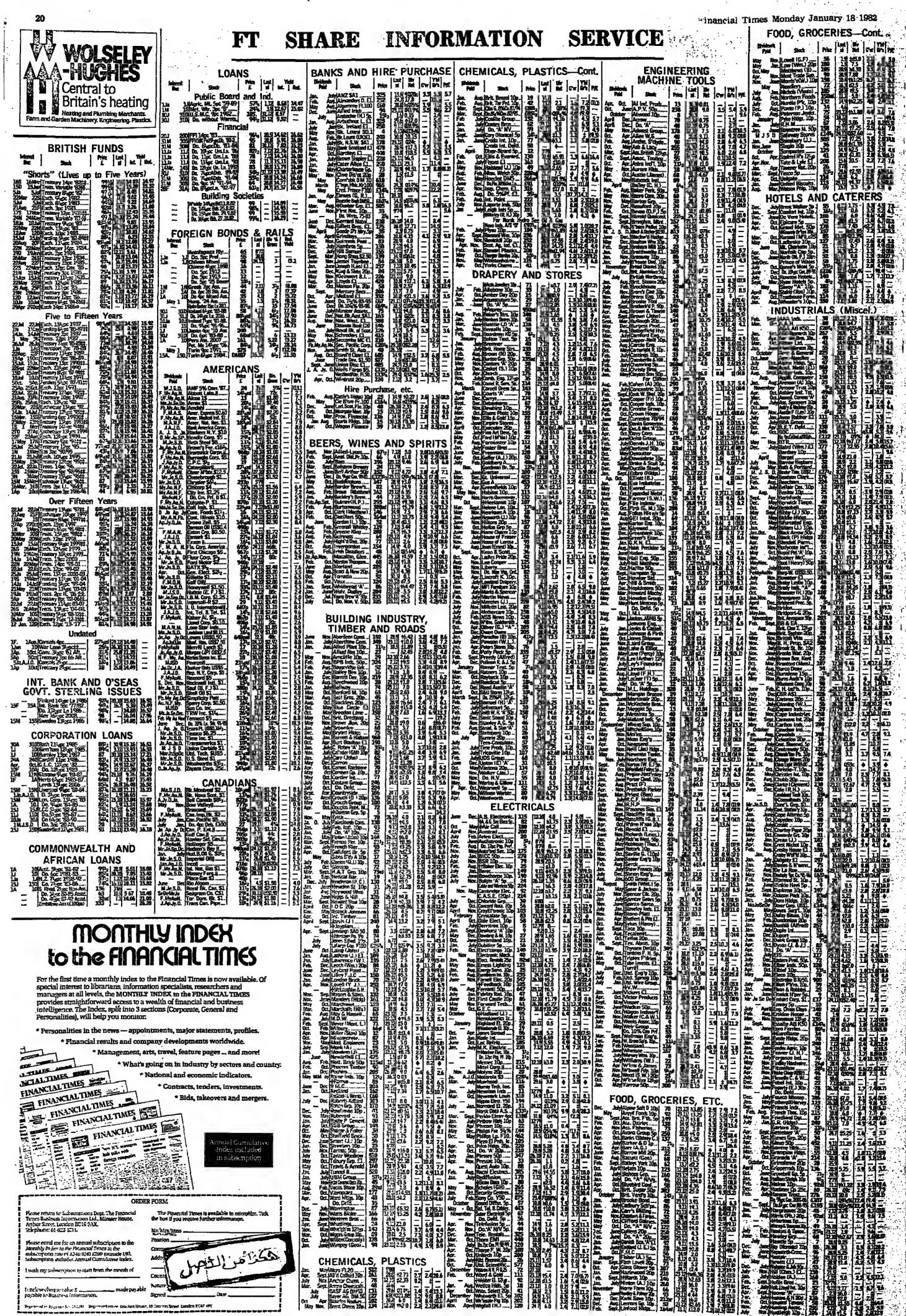
Gold Bullion Ifine ouncel

1£2011c.20131;\$3751a.3751c £2013a-2024; \$37412-3761c

EXCHANGE CROSS RATES

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'DRASTIC' ACTION PROMISED TO OPEN MARKETS TO IMPORTS

Vow on Japanese trade bar

JAPAN will take "drastic" action soon to open its markets pected "drastic improvements" to foreign imports by removing in dismantling Japan's non-mon-tariff barriers to trade, Mr Shimtaro Abe, the Minister of International Trade and In-dustry, said at the weekend.

and promised to adhere to "the Japanese markets than measures letter and the spirit" of the already announced by the new Ceneral Agreement on Tariffs Government and Trade (Gatt) to combat November. mounting protectionist pres-

Mr 'Abe made no specific commitments to the relaxed meeting of senior officials, which grouped representatives of the U.S., the EEC, Japan and Canada. He said however that on his return to Tokyo this week, he would ask for the cur-rent review of Japan's non-

Rising U.S.

rates worry

ministers

By David White in Paris

EUROPEAN concern at the re-

cent resurgence of U.S. interest rates was voiced yesterday dur-

ing a meeting of Finance Ministers from the top Western

The "Croup of Five" mini-sters beld their talks in an iso-

lated building in the grounds of

the Palace of Versailles. They

are understood to have dis-

countries.

interest

Officials at the talks said Mr Abe had mentioned health and safety standards and product-The Japanese pledge came testing arrangements as possible after two days of informal talks, areas for action as well as faster in which representatives of the world's main trading nations reunderstood him to be going affirmed their faith in free trade Covernment that took office in

> European officials at the talks nevertheless said they feared that Japanese action, as in the past, would be "too little and too late." The U.S. and the EEC have warned Tokyo in recent months that it must open its markets or face the danger of retaliatory action from its

The Europeans also expressed

be allowed access to the U.S. multilateral world trade system market only to the extent that he said. their own markets were open to

American goods. European officials said that such thinking could mean a the GATT objectives, of "freer return to the beggar-my and mutually beneficial trade." neigbour policies of the 1930s. The participants also sai and fracture the open world trading system that had been developed since the Second

sentative, tried to dispel these fears. At an open-air press con-ference on a private gold course Mr Brock said the U.S. did not want "to climb on the back of a tiger" that would be difficult to get off.

·He said Washington was lookin the sense of asking others to open their markets. It was not Reagan Administration's

As a result, he said, he ex- study in Washington, under volumes or to act selectively, in period "drastic improvements" which foreign countries would a way that would undermind the

He said the meeting had agreed to try to manage trade The participants also said they bad agreed to consult each

any " precipitious " trade action. World War.

After the talks Mr William agreed that greater emphasis
Brockfi the U.S. trade repressional should be placed on industrial co-operation through opening up capital markets, particularly the Japanese market, to mutual investment, and that work should go ahead on U.S. pro-posals for liberalising trade and investment in services.

The meeting made no attempt ing for "affirmative" reciprocity to resolve current trade disputes, such as that between the U.S. and the EEC over European tariff barriers to be stepped up alarm at the idea of trade intention to take "negative was discussed, but no progress and concluded this month. "reciprocity" currently under steps" that would reduce trade was made, officials said.

Budget tax relief plan

Treasury ministers and the the least controversial part of the proposal contained in a confidential Treasury document circulating among senior mioisters. This will allow tax relief—principally corporation tax and petroleum revenue tax

cussed mainly the international monetary situations. No announcement was made after the meeting, which brought tog her Mr Donald Regan, U.S. Treasury Secretary, Sir Geoffrey Howe, the UK Chancellor of the Exchequer. and the Finance Ministers of West Germany and

At least one Treasury minister is "worried" by this idea and The issue of Poland's debt to the West is thought to have featured as well in the talks, following a meeting in Paris last week between senior officials of the main creditor of nounds in revenue.

Central bank governors from the five countries were also invited to partake in a luncheon at Versailles given by M. Jacques Dolors, the French Finance Minister, prior to the

The talks were one of a series of regular informal gatherings of the "Croup of Five." The meeting was specifically geared to the forthcoming interim committee of the International Monteary Fund, to be held in Helsinki in May.

Weather

UK TODAY

CLOUDY with rain in the West and North. Sunny in the East and centre. London, Sonth East, Midlands, Central North and N.E. England. Bright or sunny, some fog clearing. Max. 9C (48F). Other areas

Mostly cloudy, some rain or drizzle, fog on coasts. Max. 11C (46F).
Outlook: Mostly dry, apart
from a little rain in the NW. Overnight fog clearing slowly,

WORLDWIDE

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to boost inner cities

Budget for companies directing in Britain's depressed and declining inner citles.

Inland Revenue bave agreed on -on contributions to Enterprise Agencies.

A far more radical and expen-

sive concession is a proposal to allow tax relief for bricks-andmortar investments in the city areas, recognised by the Covernment as the most depressed by their designation as programme and partnership authorities.

the Inland Revenue is said in Whiteball to be "wholly Whiteball to be "wholly hysterical" because it fears it could rapidly escalate into relief costing tens of millions The Government is

ing about anxiously for some and imaginative initiatives "to put heart" into the Budget and very few have been forthcoming. The introduction of a system of Urban Development Action Grants on

THE GOVERNMENT is to may therefore, also be locluded Reckitts and Norwich Union) introduce tax relief in the in the Budget package. west Cornwall and some British

specific Covernment grant, loan or subsidy to a local project in inner urbon areas, if a sub-stantial portion of the cost has already been committed by the

The intention was to bring the idea forward "some time in but the attractloo of using it to put some glitter into the Budget is gaining ground.

Tax relief on Enterprise Agency contributions is really an extension of relief for cootributions to Chambers of Commerce. The loss to the Revenue is not likely to be more than about £500,000 a year.

Companies which will gain include all the sponsors of the London Enterprise Agency (Barclays, British Petroleum, British Oxygen, General Electric, International Business Machines, Industrial and Com-mercial Finance Corporation. Midland

Whitbread). Agencies in the provinces columns were out of balance. include Birmingham, St Helen'a (principally Pilkingtons), Leeds (many locally based firms), teed inclusion this year because Bristol (Imperial Tobacco), of the inner city riots last the lines of the U.S. system Norwich (Bally Shoes, banks, summer.

Sir Geoffrey Howe. Chaocellor, and Mrs Margaret
Thatcher bave both accepted the Idea, which provides sized, locally based companies to make big investment in de prived, commercially unattrac-

tive areas. This is where the

wider-scale tax relief plan comes

BP, for example, is particularly anxious to put large sums into inner cities rather than petroleum revenue tax.

The arguments against the

plan centre on fiscal purity and the undesirability of reliefs (except mortgage relief) and Cabinet is moving to the view, strongly put by Mr Michael Heseltine, Environment Secretary, that although one or two schemes have already started without tax rellef, big inceotives are needed to attract private sector reasurces to solve an urgent problem.

A similar scheme was pen-cilled into last year's Budget the Friday Bank, Shell, United Biscuits and before Budget day, because the expenditure revenue thought to have been guaran-

TUC cautious on militant action over Bill to curb union powers

BY CHRISTIAN TYLER, LABOUR EDITOR

the trade unions into Industrial retaliation against the Government's proposed new labour relations legislation, or to pull out of the tripartite National Economic Development Council

in protest.

A confidential paper circulated to unions ahead of Wedoesday's meeting of the TUC employment policy and organisation committee discloses that ship in two weeks, and hopes to Congress House is taking a put it on the statute book by cautious view of militant proposals put up by major unions. But last night it looked as though there would be a revolt against the mild strategy proposed in the TUC's 10-page document and that a majority of union leaders on the committee would insist on a tougher line being taken.

Ceneral and Municipal Workers Union, is that the TUC should across whole industries if an port among other unions to he-

for the Transport Workers' demand that the TUC pull out of NEDC, and its industrial sector working parties.

The Government is expected to publish its Bill on trade Bullding union immunities and the closed mid-summer. It will be called the Employment Bill, like its predecessor from this Government, now the Employment Act.

Some minor changes to the consultative document published in November by Mr Normao Tebbit, Employment Secretary. eing taken. are expected. Proposals for The main suggestion, from the greatly increasing financial compensation for closed shop "victims" may be modified in co-ordinate action by unions the light of objections from the CBI that they could bankrupt

THE TUC is unwilling to lead appears to have sufficient sup- their "corporate immunity" has been withdrawn by the come part of the TUC campaign legislation may also be changed to meet objections from Con-But there is less consensus servative trade unionists

> But no decision has yet been taken on the major question whether to suffen the proposal for making "union-only ders and contracts illegal. employers demanded that trade unions should lose their immunity from prosecution if workers go on strike to keep non-union labour

off building sites.
The TUC strategy document concentrates on public demonstrations rather than industrial retaliation, arguing that it is not the TUC's job to decide when strikes should begin and would become liable to suits fur damages under the Tebbit Bill if it directed operations.

It is also cautious about a CMWU suggestion that the TUC should boycott periodic ballots employer in that industry sues smaller firms. The scale of to review closed shop agree-a union for damages. This damages payable by unions once ments.

Tebbit predicts jobless over 3m

BY OUR POLITICAL CORRESPONDENT

MR NORMAN TEBBIT, the Employment Secretary, yes terday gave the firmest indication yet that the Government expects unemployment to exceed 3m this month. He said that a combination of the usual seasonal factors and the abnormally bad weather, meant that it was "extremely likely unemployment would go over 3m in January.

He also predicted that unemployment would go on rising through the first part of this year, but that the downward trend would be sufficiently well established by the next election to ensure victory for the Conservative

His warning came as MPs returned to London today for the slart of a new term in which concern about unemployment is again likely to be the over-riding issue.

The Conservative Party has been bracing itself for nnemployment to reach 3ni for several months, but even so the breaking of the 3m harrier is almost certain to increase the pressure from a very vocal section of its own backbenchers for re-flation. It may also have the effect of helping to unite Labour

MPs, who will be hoping to show that the accord reached between Labour and union leaders at Blsbop's Stortford really did mark a turning point for the party.

Though in the short term

MPs may be preoccupied with the rail dispute and the effects of the weather, the Budget on March 9 will be the focal point of the new term. Increasingly, those Tories with doubts about the Government's policies see it as the

one last chance of saving the next clection for the Conservatives.

Over the next few weeks, the so-called "wets" holh inside and ontside the Cabinet are expected to hold a series of private meetings in an attempt to co-ordinale an alternative strategy, probably involving a reflationary package of £2-3hn. Yesterday. London Week-

end Television published an opinion poll, carried ont by Opinion Research Centre which Tory left-wingers are likely to use in support of their argument for reflation. It showed that unemploy-ment is regarded as the most important issue by 80 per cent of those voters who, while not intending to vole Conservative at the moment,

say they might eventually be

persuaded to do so.

Credit Agricole, which have

today. The

Council's decision, The decision is bound to spark off debate about the powers of the Constitutional

talks orean BY JOHN GRIFFITHS

Crucial

THE UK Government-backed De Lorean sports car company is likely to be told today whether \$60m (£32m)-\$70m in export finance guarantees will e provided by the Export Credits Guarantee Department to overcome the company's ncreasing cash flow difficulties

Obtaining the guarantees has assumed major importance to De Lorean, which has reached the \$30m ceiling of its export fioaoce credit with Bank of America. Sales have slumped sharply and two weeks ago the company abandoned for the foreseeable future its threetimes postponed attempt to raise private finance in the U.S. Today's meeting in Londoo between senior De Lorean executives and the department follows the lodging in New York State Supreme Court at the weekend of a \$19m suit against De Lorean's chairman, Mr John De Lorean, by a former vice-president, Mr William Had-

Production of the stainless steel-bodied cars has been cut from 400 a week to 200 at the Dummirry plant, near Belfast, which employs 2,600 people. The meeting is expected to bring to a climax several months

of negotiations. The department has expressed Itself unwilling to provide such a guarantee without itself being underwritten by either of the two Northern Ireland development agencies through which the £80m government aid provided so far has been channelled — the Northern Ireland Development Agency and the Department of

Bank finance

De Lorean says that such a guarantee, which would give access to bank finance at subsidised interest rates, would allow production to resume at closer to its scheduled output of 400 a week in preparation for seasonal sales upturn in March Without the guarantee output can only be sustained at the The discount market lived, like jeopardise at least some of the The New York court suit fol-

lows the sacking of Mr Haddad in connection with allegations the company contained in a file handed to Mr Nicholas Winterfon, Conservative MP for Macclesfield, by another former Do Lorean employee Mr Haddad was drawn into the affair hecause of an alleged memo from him to De Lorean concerning company expendi-

The Director of Public Prosecutions cleared the company of criminal misconduct, in the wake of which Mr De Lorean filed seven suits for libel, in-cluding suits against Mr Haddad and Mr Winterton. Mr Haddad's suit afferes

slander, libel, fraud and malicious termination employment for reasons contrary to public nolicy" Wintertung is also filing a counter-suit and save he will continue "at the appropriate time." to press in the Communs the issue of how the De Lorean

comoany has conducted its

Mr Haddad's suit includes allegations relating to the accuracy of the prospectus for public offering planned for last year: the alleged manner in which the company has sought omodify its agreement with the UK Covernment: the effect on De Lorean executives' and huldings and dealers' share share options of the share offer being made through a new holding company rather than through De Lorean Motor Company: paymeots to GPD -Services. 8 Panamanian-registered partnership based in Geneva for car development; and the extent of personal prerequisite enjoyed by Mr De Lorean.

Continued from Page 1

French

special statutes and therefore cscape state takeover. Three smaller institutions, registered as ordinary banks, are. however, likely now to be added to the

Shares in the companies concerned were expected to be suspended on the stockmarket

main opponents of nationalisation—including the former Economy Minisler, M René Monory—expressed satisfaction at the Constitutional

Council, set up under the 1958 Constitution. The youngest member of the council is 68 and all the members were appointed before the election.

THE LEX COLUMN The price of the

top hat club

Five months after the introduction of new money market arrangements by the Bank of England, Smith St Aubyn, a medium-sized discount bouse, admitted to having lost £15m -three quarters of its net worth - in the gilt-edged mar-

The two events may be in no way linked. But Smith's losses focus attention very forcibly on the question of bow the houses are to be remunerated for the services they provide. If discount houses are important, they should not need to supple-ment their income through punting in bighly volatile markets.
Ironically, the basic bill buai-

ness of the houses has been comfortably rewarded since August, and it seems that despite the Smith debacle, the total resources of the market actually grew in the last quarter of 1981. Smith quarter of 1931. Smith apparently compounded its losses on Treasury 15 per cent 1985 by switching some of this holding into the newly issued partly paid short tap which promptly became a very weak

stock.

All this took place right under England, which can only have concluded that it was not its job to protect the houses from the consequences of their own mistakes—provided, that is, that only sharebolders money, not depositors' was at stake, and that the system as a whole was not threatened. But perhaps the system is under some sort of general threat. The bouses exist in their pre-

sent form because the Bank likes to preserve a highly geared buffer, extremely sensi-tive to slight changes in the wind of official feeling about loterest rates, between itself and the backing system. Sensitivity is not everything; the houses must make a living. Under the old system of reserve assets it was easy; banks were required to leave large amounts of money with the houses, often when the houses' books were full - at low rates of interest.

which for some reason the from 6 per cent, a smaller clearers resented very much. amount of capital will be able

tions to work smoothly, the any houses but those threatened houses bave to be able to accom- with extinction to raise rights modate large amounts of eligible bills at times when the Bank itself is not a substantial banks which want their bills to central bank are required to bold an average 6 per cent of their book — the so-called "club money" — with the dis-count houses. These deposits are a source of relatively cheap money which may be invested in higher yielding hills.

Suppose there were no club money. The houses would have to bid for funds in the interbank market. But they would then be unwilling to hold bills. since the Bank's need to encourage a plentiful supply of bill issues to lobricate its own operations requires that the yield oo bilks should generally be below the cost of interbank funds. So some degree of subsidy of the bouses' deposit base would seem to be required if. they are to act as a channel for

Ideally, the houses dependence on sources of earnings of such low quality as bend mar-ket speculation and running margins on cheap deposits should be reduced. Even if the club subscription were brought down from the present 6 per cent as the Bank might eventually like, the houses could still live by making a turn onbills bought from the banks, heldand sold on to the Bank of England, or by charging a comtbrough. Theirs would become a volume, low margins, and necessarily lower costs.

This cosy system increasingly to earn an edequate reward. came under attack, but under Smith St Aobyn bas inwittingly the Bank's new arrangements accomplished part of the the endowment effect still necessary shrankage, and it is exists, if in a less prominent this consideration that explains form. For the Bank's operative Bank's relactance to allow

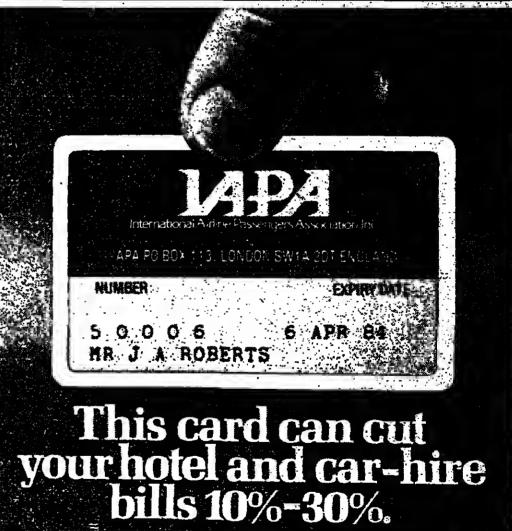
issue finance Smith pulsed in less than Edur. But under the present rules, if the market's capital base holder. To enable the houses if the market's capital base to finance their bill books, those shrinks so does its capacity to be eligible for rediscount at the since the size of a house's central bank are required to balance sheet is limited, under dential safeguard, to 30 times

its net worth. This blunt instrument could & easily be sharpened by allowing bonses to bold a larger portfolio of low-risk assetsbeing calculated more as a func. tion of capital volatility than of credit standing. So a house that wanted to hold nothing but jets Clast eligible bills could run a book of, say, 40 times its capital base. Anyone tempted to invest in nothing but War Loan would be restricted to much less than 20

reached through which the discount market as a whole could run a big enough ball book on a small enough capital base to satisfy both the needs of the mooey markets and the sharebolders of the discount houses.
It is hard to see how else the Bank can reconcile its twin aims of keeping the market in existsitical attributes. In these distrumstances economies of scale would sorrely take more mergers, and the dramber of houses could make halve.

The Bank is trying to expose

the discount market to the cold mission on bills passed straight spent basking on the Galapure broking operation-high leathery and resilient instituolume, low margins, and necestions, capable of surviving in the harshest climate; will The Bank's control over the emerge—the two biggest courses club money rate gives it direct are elready most of the way can only be sustained at the The discount market lived, like influence over the return on there. Or there could be an current level. This could the clearing banks own retail capital employed in the discount empty beach.



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